U.S. FOOD & DRUG ADMINISTRATION

MEMORANDUM

TO: File

FROM: Center for Drug Evaluation and Research

DATE: July 29, 2020

SUBJECT: Clinical need for squaric acid dibutyl ester (SADBE) in compounding under section 503B of the FD&C Act

This memorandum reflects the discussions of the 503B Working Group, comprised of representatives from the following: CDER Office of New Drugs, Office of Pharmaceutical Quality, Office of Regulatory Policy, Office of Compliance, and Office of Regulatory Affairs.

The Food and Drug Administration (FDA or Agency) is developing a list of bulk drug substances that can be used in compounding under section 503B of the Federal Food, Drug, and Cosmetic Act (FD&C Act) (21 U.S.C. 353b). Section 503B of the FD&C Act describes the conditions that must be satisfied for drug products compounded by an outsourcing facility to be exempt from requirements concerning FDA approval prior to marketing (section 505 (21 U.S.C. 355)); labeling of drugs with adequate directions for use (section 502(f)(1) (21 U.S.C. 352(f)(1))); and drug supply chain security requirements (section 582 (21 U.S.C. 360eee-1)).[1]

To qualify for the exemptions available in section 503B of the FD&C Act, a drug product must be compounded in an outsourcing facility that does not compound using bulk drug substances unless: (1) the bulk drug substance appears on a list established by the Secretary of Health and Human Services identifying bulk drug substances for which there is a clinical need (the 503B Bulks List), or (2) the drug compounded from such bulk drug substances appears on the drug shortage list in effect under section 506E of the FD&C Act (21 U.S.C. 356e) at the time of compounding, distribution, and dispensing.

This memorandum evaluates squaric acid dibutyl ester (SADBE) for the 503B Bulks List for the treatment of alopecia aerate and warts under the "clinical need" standard in section 503B of the Act.

We evaluated SADBE for potential inclusion on the 503B Bulks List under the clinical need standard in section 503B, consistent with the interpretation and policies described in FDA's

[1] In general, drug products compounded under the conditions in section 503B must meet current good manufacturing practice (CGMP) requirements in section 501(a)(2)(B) of the FD&C Act (21 U.S.C. 351(a)(2)(B)). Outsourcing facilities are also subject to FDA inspections according to a risk-based schedule, specific adverse event reporting requirements, and other conditions that help to mitigate the risks of the drug products they compound. Outsourcing facilities may or may not obtain prescriptions for identified individual patients and can, therefore, distribute compounded drugs to healthcare practitioners for "office stock," to hold in their offices in advance of patient need.

March 2019 guidance, "Evaluation of Bulk Drug Substances Nominated for Use in Compounding Under Section 503B of the Federal Food, Drug, and Cosmetic Act" (the Clinical Need Guidance). Because SADBE is not a component of an FDA-approved drug, we did not ask the questions in the Part 1 analysis described in the Clinical Need Guidance. Consistent with the Part 2 analysis in the Clinical Need Guidance, we have considered data and information regarding the physical and chemical characterization of SADBE, safety issues raised by use of this substance in compounding, available evidence of effectiveness or lack of effectiveness, and historical and current use in compounding.[2] **For the reasons stated below, we conclude that the Agency should propose adding the bulk drug substance SADBE to the 503B Bulks List with a limitation for topical use only.**

I. Background

A. Nominated Product

The American Society of Health-System Pharmacists (ASHP) nominated SADBE, up to 2 percent for topical use for the treatment of alopecia aerate and warts (Docket No. FDA-2013-N-1524, document no. FDA-2013-N-1524-1363). (See Appendix A – ASHP Nomination.)

B. Other Materials Reviewed

In addition to ASHP's nomination for the 503B Bulks List, the Agency considered data and information from its earlier evaluation regarding the use of SADBE for the list of bulk drug substances that can be used in compounding under section 503A of the FD&C Act (21 U.S.C. 353a) (the 503A Bulks List) (the 503A Evaluation). SADBE was nominated for use in compounding drug products under section 503A to treat alopecia areata, warts, and herpes labialis. FDA reviewed SADBE in a February 4, 2015 memorandum to the Pharmacy Compounding Advisory Committee (PCAC), which included background materials from a 1999 review of SADBE. (See Appendix B – February 4, 2015 Memorandum.) At its meeting on February 24, 2015, the PCAC voted to include SADBE for topical use on the 503A Bulks List.[3] FDA also consulted with the United States Pharmacopoeia Convention (USP) as part of the Agency's consideration of SADBE for inclusion on the 503A Bulks List. FDA added this substance to the 503A Bulks List with a limitation for topical use only (84 FR 4696).

FDA also considered the report provided by the University of Maryland Center of Excellence in Regulatory Science and Innovation (CERSI), (see Appendix C – CERSI Report on SADBE) and conducted a search for relevant scientific literature and safety information, as described below in footnote 6, focusing on materials published or submitted to FDA since 503A Evaluation.

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[2] In particular, OPQ has reviewed the data and information regarding the physical and chemical characterization of SADBE, OND has reviewed safety issues raised by use of this substance in compounding and available evidence of effectiveness or lack of effectiveness, and Compliance has reviewed information about the historical and current use in compounding.

[3] Materials from the PCAC's 2015 meetings are available on FDA's website at https://wayback.archive-it.org/7993/20170403224128/https://www.fda.gov/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/PharmacyCompoundingAdvisoryCommittee/ucm431285.htm.

II. Evaluation

A. Physical and Chemical Characterization

We agree with the conclusion in the February 4, 2015 memorandum to the PCAC that SADBE is well-characterized but degrades rapidly in the presence of water.[4] Due to SADBE's sensitivity to water, it should only be used in compounding in media in which there is no water. While the impurity profile of SADBE may differ depending on the route of synthesis, the likely impurities are unreacted starting materials and degradation products, squaric acid and n-butanol. As an oil, SADBE is more difficult to purify than crystalline solids.

B. Safety Issues Raised by Use of the Substance in Compounding

We agree with the conclusions in the February 4, 2015 memorandum to the PCAC which reviewed nonclinical data and human safety data.

Although this memorandum states that available nonclinical data are inadequate to determine whether SADBE would be safe to use in compounding,[5] it also notes that there has been considerable information from clinical use over 40 years to support compounding.

There are no randomized controlled clinical trials for SADBE use and there is a lack of long-term safety data and safety data for specific populations such as pregnant or lactating women.[6] Reports of adverse reactions have included the expected manifestations of contact sensitization, such as severe eczematous reactions with potential dissemination, erythema, pruritus, blisters, burning, and bleeding. There have also been reports of hypopigmentation and lymphadenopathy. As SADBE is a contact sensitizer, there is a concern that handlers of the substance may become inadvertently sensitized and develop contact dermatitis.

SADBE's mechanism of therapeutic action is through its sensitizing effect which induces allergic contact dermatitis. The reported adverse effects are related to SADBE's mechanism of therapeutic action as a sensitizer causing allergic contact dermatitis in treated patients. The skin reactions are usually limited in scope and in severity and are generally manageable by the patient without additional medical intervention.

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[4] See Appendix B – February 4, 2015 Memorandum, at Section II.A.

[5] See Appendix B – February 4, 2015 Memorandum, at Section II.B.1.

[6] See Appendix B – February 4, 2015 Memorandum, at Section II.B.2.

In March and April 2020, a search of the FAERS, CAERS, EMBASE, PubMed, TOXNET, and Google/Google Scholar databases was conducted focusing on materials published or submitted to FDA since the 503A Evaluation. Our determination regarding SADBE's safety and efficacy profile is unchanged. The March 2020 FAERS search identified only 6 new reports, all of which were reports about lack of efficacy rather than safety issues and all of them were confounded by the use of multiple drugs. There were no reports retrieved in CAERS over the same period. And, the other sources identified 14 relevant new publications that were not previously considered (see Section IV. - Bibliography). The findings in these sources do not alter conclusions reached previously on the use of SADBE compounding for the treatment of alopecia areata or warts.

C. Available Evidence of Effectiveness or Lack of Effectiveness

We agree with the conclusion in the February 4, 2015 memorandum to the PCAC that, although there are no adequate and well controlled trials on SADBE, there appears to be evidence that this substance used in compounding for the treatment of alopecia areata and recalcitrant warts may be useful in a substantial proportion of patients.[7] We recognize that treatment with SADBE requires initial sensitization and typical protocols involve a SADBE strength of 2 percent, but higher or lower concentrations may be used in other patients (see Appendix C – CERSI Report on SADBE). As lack of sensitization is not a safety issue, the nominator has not requested an upper limit for SADBE strength and we concur.

The February 4, 2015 memorandum states that for treatment of alopecia areata, topical immunotherapy with SADBE provides response rates reported in the order of 50 percent to 60 percent, although relapses are reported in the majority of patients. The variability of results is attributed primarily to factors like age, disease duration, and severity, but may also be related to the SADBE source and strengths used in the reports. Responses are lower for patients with a younger age of onset, longer duration of disease, and alopecia totalis/universalis. Because of the amount of evidence accumulated over time, Fitzpatrick's Dermatology in General Medicine (8th edition, 2012) states: "Although not approved by the FDA, topical immunotherapy seems to be the most effective therapeutic option with the best safety profile in the treatment of chronic severe alopecia areata." Currently, the topical immunotherapy commonly used in medical practice for alopecia areata are SADBE and diphenylcyclopropenone.

The treatment response of recalcitrant cutaneous warts with SADBE topical immunotherapy is reported to range from 58 percent to 100 percent.

D. Historical and Current Use in Compounding

SADBE has been used in compounding to treat alopecia areata and resistant non-genital warts for 30 to 40 years.[8] Use of SADBE for these conditions has been reported in North and South America, Australia, as well as European and Asian countries.

Information obtained by CERSI from its review of articles, other materials, and interviews supports our assessment of the historical use and suggests a similar profile for the current use of SADBE. Dermatologists interviewed stated that they use SADBE for alopecia areata and warts.

III. Recommendation

SADBE was nominated as a bulk drug substance for the 503B Bulks List to compound drug products for topical use at variable concentrations, ranging from 2 percent initially to 0.0001 percent to 0.001 percent for maintenance, for the treatment of alopecia areata and warts. [9] The nominated bulk drug substance is not a component of an FDA-approved drug product. We evaluated SADBE for potential inclusion on the 503B Bulks List under the clinical need standard

[7] See Appendix B – February 4, 2015 Memorandum, at Section II.C, and footnote 5 above.

[8] See Appendix B – February 4, 2015 Memorandum, at Section II.D.

[9] See Docket No. FDA-2013-N-1524, document no. FDA-2013-N-1524-1363.

in section 503B, considering data and information regarding the physical and chemical characterization of SADBE, safety issues raised by use of this substance in compounding, available evidence of effectiveness or lack of effectiveness, and historical and current use in compounding.

SADBE is well-characterized but there are concerns about stability and consistency in product quality. There is a lack of adequate nonclinical data, long-term safety data, and safety information about use in specific populations such as pregnant and lactating women. Despite these data gaps, considerable human safety data have accumulated over the past 40 years from its use in compounding drug products for dermatologists to treat alopecia areata and resistant non-genital warts and from reports for its use internationally. The reported adverse effects are related to SADBE's mechanism of therapeutic action as a sensitizer causing allergic contact dermatitis in treated patients.

In addition, both alopecia areata and warts may not respond adequately to available treatments. SADBE can be a potentially effective agent for patients who have failed FDA-approved and other therapies for these conditions. We recognize that treatment with SADBE requires initial sensitization and typical protocols involve a SADBE concentration of 2 percent, but lower concentrations may be used in other patients (see Appendix C – CERSI Report on SADBE).

On balance, the physical and chemical characterization, safety, effectiveness, and historical and current use of SADBE weigh in favor of including this substance on the 503B Bulks List. Accordingly, we propose adding SADBE to the 503B Bulks List for topical dermal use only. Nominators did not submit, and we have not identified significant evidence to support use in other routes of administration.

IV. Bibliography

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APPENDIX SECTION A

September 30, 2014

Division of Dockets Management (HFA-305)
Food and Drug Administration
Department of Health and Human Services
5630 Fishers Lane
Room 1061
Rockville, MD 20852

Re: FDA-2013-D-1524 Bulk Drug Substances That May Be Used To Compound Drug Products in Accordance with Section 503A of the Federal Food, Drug, and Cosmetic Act, Concerning Outsourcing Facilities; Revised Request for Nominations

Dear Sir/Madam:

The American Society of Health-System Pharmacists (ASHP) is pleased to submit comments to the Food and Drug Administration (FDA) on bulk drug substances that may be used to compound drug products. Nominations for this list were originally announced in the Federal Register on December 4, 2013.[1] A revision to this notification was published on July 2, 2014.[2] This list would fulfill Section 503A of the Federal Food, Drug and Cosmetic Act (FD&C Act) which regulates entities that compound drugs. On November 27, 2013, the Drug Quality and Security Act (DQSA) was signed into law [P.L. 113-54]. The DQSA removed several parts of Section 503A that were declared unconstitutional by the U. S. Supreme Court in 2002. The law requires the FDA to go through the rulemaking process to implement several parts of Section 503A, including a requirement to establish a list of bulk drug substances that may be used in compounding for which there is no applicable USP or NF monograph nor are they components of an FDA-Approved drug.

ASHP represents pharmacists who serve as patient care providers in acute and ambulatory settings. The organization's more than 40,000 members include pharmacists, student pharmacists and pharmacy technicians. For over 70 years, ASHP has been on the forefront of efforts to improve medication use and enhance patient safety. As you are well aware, ASHP was

1 Federal Register, Volume 78, No. 233. Pages 72838 –72840
2 Federal Register, Volume 79, No. 127. Pages 37750–37754

actively engaged with the FDA and Federal lawmakers from the onset of the meningitis outbreak in the Fall of 2012. In the aftermath of the incident, ASHP has worked with policymakers, practitioners, and nationally recognized experts in compounding and manufacturing to develop new approaches to protect patients from preventable harm, and to give practitioners and organizations confidence that compounding outsourcers are appropriately regulated and inspected, and that the products they produce are safe.

ASHP understands that the FDA received thousands of nominations for substances to be included on the bulk list, but that the overwhelming majority of nominations did not meet the basic definition of "active ingredient," and will therefore not be considered by the FDA. Further, the Agency states "Bulk substances that were previously nominated will not be further considered unless they are renominated and adequately supported." ASHP previously submitted comments to the FDA under the original solicitation for bulk substances and we are again nominating three chemicals – diphenylcyclopropenone, squaric acid dibutyl ester, and thymol iodide – for consideration by the FDA. Please see the accompanying excel file which contains a worksheet for each of the drugs with the information outlined by the FDA.

ASHP appreciates the opportunity to comment as the FDA develops a list of bulk drug substances that may be used in compounding. Please contact me if you have any questions or wish to discuss our comments further. I can be reached by telephone at 301-664-8806, or by e-mail at ctopoleski@ashp.org.

Sincerely,

Christopher J. Topoleski
Director, Federal Regulatory Affairs.

Column A—What information is requested?	Column B—put data specific to the nominated substance	References
What is the name of the nominated ingredient?	Squaric acid dibutyl ester	http://www.ncbi.nlm.nih.gov/pubmed?cmd=search&cmd_current=Limits&term=Squaric+acid+dibutyl+ester+OR+2892-62-8+%5Brn%5D
Is the ingredient an active ingredient that meets the definition of “bulk drug substance” in § 207.3(a)(4)?	Yes	
What is the chemical name of the substance?	3,4-Dibutoxy-3-cyclobutene-1,2-dione (C12H18O4)	http://chem.sis.nlm.nih.gov/chemidplus/unii/4RTO57VG65
What is the common name of the substance?	Squaric acid dibutyl ester	http://chem.sis.nlm.nih.gov/chemidplus/unii/4RTO57VG65
Does the substance have a UNII Code?	4RTO57VG65	http://fdasis.nlm.nih.gov/srs/ProxyServlet?mergeData=true&objectHandle=DBMaint&APPLICATION_NAME=fdasrs&actionHandle=default&nextPage=jsp/srs/ResultScreen.jsp&TXTSUPERLISTID=4RTO57VG65&QV1=SQUARIC+ACID+DIBUTYL+ESTER
What is the chemical grade of the substance?	pharmaceutical or research grade	Sigma Aldrich product description
What is the strength, quality, stability, and purity of the ingredient?	99%; 99.9%	at http://www.keratin.com/ad/ad049.shtml
How is the ingredient supplied?	Crystalline or liquid	http://www.sigmaaldrich.com/catalog/product/aldrich/123447?lang=en&region=US
Is the substance recognized in foreign pharmacopeias or registered in other countries?	No	http://crs.edqm.eu/db/4DCGI/web_catalog_CRS http://www.pharmacopoeia.co.uk/pdf/BP_2015_Index.pdf http://www.pmda.go.jp/english/pharmacopoeia/pdf/jpdata/JP16eng.pdf
Has information been submitted about the substance to the USP for consideration of monograph development?	Unknown; no current monograph avail	USP-NF
What medical condition(s) is the drug product compounded with the bulk drug substances intended to treat?	Treatment of extensive alopecia aerate and warts	Monograph, Martindale: The Complete Drug Reference
Are there other drug products approved by FDA to treat the same medical condition?	No	

If there are FDA-approved drug products that address the same medical condition, why is there a clinical need for a compounded drug product?	No currently available topical sensitizer for treatment of alopecial areata	http://www.ncbi.nlm.nih.gov/pubmed/20115946
Are there safety and efficacy data on compounded drugs using the nominated substance?	Yes; limited to conducted studies, best information based on review article	http://www.ncbi.nlm.nih.gov/pubmed/20115946
If there is an FDA-approved drug product that includes the bulk drug substance nominated, is it necessary to compound a drug product from the bulk drug substance rather than from the FDA-approved drug product?	No	http://www.accessdata.fda.gov/scripts/cder/ob/default.cfm
What dosage form(s) will be compounded using the bulk drug substance?	Topical Solution	
What strength(s) will be compounded from the nominated substance?	Varies from 2% initially to 0.0001% to 0.001% for maintenance	
What are the anticipated route(s) of administration of the compounded drug product(s)?	Topically	
Has the bulk drug substance been used previously to compound drug product(s)?	Yes, most recently in 2014 as part of a study	http://www.ncbi.nlm.nih.gov/pubmed/25040421
Is there any other relevant information?	Literature search of uses	http://www.ncbi.nlm.nih.gov/pubmed?cmd=search&cmd_current=Limits&term=Squaric+acid+dibutyl+ester+OR+2892-62-8+%5Brn%5D
	MSDS:	https://extranet.fisher.co.uk/chemicalProductData_uk/wercs?itemCode=10125643&lang=EN
	CAS:	2892-62-8

APPENDIX SECTION B

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
Silver Spring, MD 20993-0002

DATE: February 4, 2015

FROM: Hon-Sum Ko
Medical Officer, Division of Dermatology and Dental Products

Renqin Duan
Toxicologist (Pharmacology Reviewer), Division of Dermatology and Dental Products

Norman Schmuff
Associate Director for Science and Communication (CMC Reviewer), Office of Process and Facilities

THROUGH: Julie Beitz
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Jane Liedtka
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Barbara Hill
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Doanh Tran
Clinical Pharmacology Team Leader, Office of Clinical Pharmacology

TO: Pharmacy Compounding Advisory Committee

SUBJECT: Review of Squaric Acid Dibutylester for Inclusion on the 503A Bulk Drug Substances List

I. Introduction

Squaric acid dibutylester (SADBE) has been nominated for inclusion on the list of bulk drug substances for use in compounding under section 503A of the Federal Food, Drug, and Cosmetic Act (FD&C Act). Indications identified in the nomination include alopecia areata, warts, and herpes labialis. FDA reviewed this substance in 1999, and it is now being reevaluated. The background materials from the prior review are attached.

We have reviewed available data on the physicochemical characteristics, safety, effectiveness, and historical use in compounding of this substance. For the reasons discussed below, we recommend that SADBE be added to the list of bulk drug substances

that can be used to compound drug products in accordance with section 503A of the FD&C Act.

II. EVALUATION CRITERIA

A. Is the substance well-characterized, physically and chemically, such that it is appropriate for use in compounding?

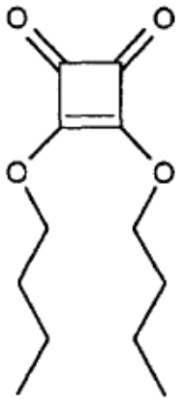
1. Stability of the API and likely dosage forms

SADBE is rapidly degraded in the presence of water and is hydrolyzed in basic solution at a much higher rate than at acidic or neutral pH (Wilkerson et al., 1985). No thermal instability has been reported. The photochemical reactivity and stability traits of SADBE have not been reported in the literature; however, it is likely to be photochemically reactive based on the molecular structure.

2. Probable routes of API synthesis

Identity

3,4-Dibutoxy-3-cyclobutene-1,2-dione
Dibutyl Squarate
Squaric Acid Dibutyl Ester
SADBE



CAS #	*2892-62-8*
Molecular Weight	*226.27*
Molecular Formula	*$C_{12}H_{18}O_4$*
Appearance	*Colorless to slightly yellow oily liquid*
Density	*0.9650 g/mL*
Refr. Index	*1.4943*
Boiling Point	*148-150° C @ 0.6 torr; 121-122° C @ 0.2 torr*
Flash Point	*>110 C*
Storage Precautions:	*Keep cold and away from moisture, protect from light*

Several methods of preparation have been reported in the chemical literature (Cohen and Cohen, 1966, Liu et al., 1997). A practical method amenable to large-scale synthesis was published in 1997 (Liu et al., 1997). It involves the reactions of squaric acid with the desired alcohol in the presence of an orthoformate.

3. Likely impurities

The likely impurities are unreacted starting materials and degradation products, squaric acid and n-butanol. As an oil, SADBE is more difficult to purify than crystalline solids.

4. Toxicity of those likely impurities

There appear to be no structural alerts for mutagenicity for the likely impurities. Other toxicity aspects are addressed in section "B" below.

5. Physicochemical characteristics pertinent to product performance, such as particle size and polymorphism

As SADBE is used in solution, there are no concerns related to particle size or polymorphism.

6. Any other information about the substance that may be relevant, such as whether the API is poorly characterized or difficult to characterize

The physical and spectroscopic properties of SADBE have been well characterized.

Conclusions: We concur with FDA's 1999 assessment, which stated, "Although squaric acid dibutyl ester is well characterized, it hydrolyzes readily in the presence of water. Since it is exquisitely sensitive to water, it should only be compounded in media in which there is no water. The impurity profile of SADBE may differ depending on the route of synthesis. SADBE used in compounding could vary significantly from SADBE used in literature studies in the level and types of impurities present; this could result in altered clinical properties and toxicities."

B. Are there concerns about the safety of the substance for use in compounding?

1. Nonclinical Assessment

The following information is summarized from the references listed below, which are the results from the search on Google, EmBase, PubMed, and TOXNET that links to multiple databases such as ChEBI, DrugPortal, EMIC, EPA ACToR, MeSH, NIST, PubChem, TOXLINE, and PubMed including PubMed AIDS, PubMed Cancer and PubMed Toxicology.

a. Pharmacology of the drug substance

SADBE is a contact sensitizer, which conjugates with a protein to form an antigen (Sherertz & Sloan, 1988). Guinea pigs have been sensitized to the dibutyl and diethyl ester derivatives of squaric acid by the application of 0.1 to 10% solutions (Noster et al., 1976; Happle et al., 1980; Avalos et al., 1989). The dibutyl ester appears to be more effective at sensitizing than the diethyl ester. Induction of an allergic contact dermatitis (ACD) by SADBE with a dose-response curve was observed in a murine local lymph node assay and modeling (Scott et al., 2002).

Treatment of alopecia areata-like hair loss with SADBE was investigated in C3H/HeJ mice (Freyschmidt-Paul et al., 1999; Gardner et al., 2000). Hair regrowth was observed on the treated side only in nine of twelve (Freyschmidt-Paul et al., 1999) or nine of eleven experimental mice (Gardner et al., 2000). The mechanism of action of topical

immunotherapy with a contact sensitizer such as SADBE still needs to be elucidated although an altered immune milieu is suspected.

No nonclinical pharmacology data were found for treatment of verruca vulgaris (warts).

b. Safety pharmacology

No information available.

c. Acute toxicity

No information available.

d. Repeat dose toxicity

No information available.

e. Mutagenicity

SADBE is not mutagenic in the Ames assay, nor does it cause the transformation of hamster kidney cells in vitro (Happle et al., 1980; Strobel & Rohrborn 1980).

f. Developmental and reproductive toxicity

Reproductive and developmental toxicity studies have not been conducted with SADBE.

g. Carcinogenicity

Carcinogenicity studies have not been conducted with SADBE. However, its breakdown product, squaric acid, causes a low incidence of tumors at the injection site in rats (van Duuren et al., 1971). Two synthetic precursors and potential contaminants of SADBE, hexachlorobutadiene and tetrachlorocyclobutenedione, show some carcinogenic activity in rats and mice, respectively (van Duuren et al., 1971; Kociba et al., 1977).

h. Toxicokinetics

No information available.

Conclusions: SADBE is not mutagenic in the Ames assay. Mammalian genotoxicity, safety pharmacology, acute and chronic toxicity, reproductive and developmental toxicity, and carcinogenicity studies have not been conducted with SADBE. Available nonclinical data are inadequate to determine whether SADBE would be safe to use in compounding.

2. Human Safety

a. Adverse reactions the substance has caused

There are no randomized controlled trials for SADBE use. Because estimated adverse reaction rates from case reporting and unblinded studies can be misleading, they will not be discussed. Case reporting comes from populations of uncertain size, while bias in unblinded studies cannot be eliminated, making estimation of adverse reaction rates unreliable.

SADBE is a contact sensitizer, and the expected manifestations of contact sensitization have been amply reported, including severe eczematous reactions with potential dissemination, erythema, pruritus, blisters, burning, and even bleeding. There have also been reports of hypopigmentation and lymphadenopathy. These findings were well discussed in FDA's 1999 review on SADBE.

b. Clinical trials assessing safety

Non-genital Warts

FDA's review of human safety data on SADBE in 1999 was not specific for cutaneous warts. However, the following table presents clinical data of SADBE in the treatment of warts as summarized by Pandey et al., upon literature review (2014).

Table 1. Previous SADBE Studies on Warts

Reference	Given by	Type of study	SADBE used, %	Type of wart treated	Age, years	Enrolled participants, *n*	Completed treatment, *n*	Success rate,%	Adverse effects	Adverse effects leading to discontinuation of treatment
Silverberg et al	Parent	Retrospective	0.20	Verruca vulgaris	5–14	61	59	58	Erythema, pruritus, burning	Burning, florid sensitization reaction
Micali et al	Physician	Retrospective	0.03–3	Verruca plana, verruca vulgaris	2–16	188	148	84	Erythema, pruritus, burning, edema, desquamation	Auto-eczematization
Lee and Mallory	Physician	Retrospective	0.5–5	Verruca vulgaris	1.8–40	29	26	69	Hypopigmentation, pruritus	Acute contact dermatitis and blisters
Hama et al	Physician	Case series	0.01	Verruca vulgaris	31 and 57	2	2	100	Erythema, pruritus	None reported

Alopecia Areata

FDA's review on human safety data on SADBE in 1999 summarized the available data at that time, citing reports by Foley et al., (1996), Nishioka et al., (1993), and Valsecchi et al., (1984) for disseminated eczema, lymphoplasia, and depigmentation, respectively.

Since that review, there have been more publications containing safety data on SADBE in the treatment of alopecia areata, including an open-label, paired comparison trial (Dall'oglio 2005) enrolling 166 adults and 97 children "with no adverse effects." In addition, two recent review articles on alopecia areata treatment discussed topical immunotherapy with SADBE and diphenylcyclopropenone without additional adverse reaction items other than those mentioned above in Section II.B.2.a (Tan et al., 2002, Alkhalifah et al., 2010).

Herpes Labialis

No data are available on SADBE in the treatment of herpes labialis.

c. Pharmacokinetic data

There are no reports of human pharmacokinetic studies in vivo. Sheretz and Sloan reported that the flux of 2% SADBE (0.5 mL applied to 7.06 cm^2 skin surface area, n=2) through human skin in vitro was 400 ± 200 $mg/cm^2.h$ (SD) with a lag time of 3.1 hours, while the flux was lower with squaric acid itself (Sheretz and Sloan, 1988).

d. The availability of alternative approved therapies that may be as safe or safer

The more common alopecia areata therapies include intralesional corticosteroid injection, topical corticosteroids, minoxidil, anthralin, phototherapy, systemic corticosteroids, cyclosporine, sulfasalazine, and methotrexate. However, the only FDA-approved therapy indicated for the treatment of alopecia areata is intralesional injection of corticosteroid suspensions, including triamcinolone acetonide, triamcinolone hexacetonide, betamethasone acetate and betamethasone sodium phosphate, and methylprednisolone acetate products. This form of treatment carries the risk of permanent skin atrophy with repeated injections.

Contact sensitizer therapy is usually reserved for use on cutaneous warts resistant to more regular treatment modalities. Such warts are frequently treated via initial physical destruction with cryotherapy and paring or excision. Topical salicylic acid in different vehicles has been included in the over-the-counter monograph, Wart Remover Drug Products (21 CFR 358 subpart B). There are no approved therapies for recalcitrant warts not responding to the treatments discussed above (cryotherapy, topical salicylic acid, etc.).

There are several FDA-approved therapies for Herpes labialis – docosanol (Abreva) as an over-the-counter cream preparation, and prescription products that include topical penciclovir cream, as well as famciclovir tablets and valacyclovir hydrochloride tablets. There is no information on SADBE in the treatment of herpes labialis. Thus safety comparisons cannot be made.

For the treatment of genital warts, there are approved drugs (podofilox gel and solution, imiquimod cream, and polyphenon E ointment). Solicitation of a contact dermatitis reaction in the skin of the genital area with sensitizers poses additional challenges for

management, because it may be more difficult to treat the eczematous reaction there, and it may also enhance the risk of secondary infections in this location. This makes the use of SADBE not desirable for the treatment of genital warts.

Conclusions: Although SADBE is not mutagenic in the Ames assay, there are inadequate nonclinical data otherwise to characterize its safety profile. Clinical data accumulated over the past 30 to 40 years, however, show that the adverse effects of SADBE are primarily related to its action as contact sensitizer, and the safety profile is likely no worse than those of available products (regardless of FDA approval) in the management of alopecia areata and warts. Nevertheless, there is a lack of data on the long-term safety of the use of SADBE.

As SADBE is a contact sensitizer, there is a concern that handlers of the substance may become inadvertently sensitized and develop contact dermatitis.

There is also a lack of data on use in specific populations such as pregnant or lactating women. Although systemic absorption of SADBE is probably low, the exposure of and risks to the fetus and neonates being nursed are unknown.

C. Are there concerns about whether a substance is effective for a particular use?

1. Reports of trials, clinical evidence, and anecdotal reports of effectiveness, or lack of effectiveness, of the bulk drug substance

Non-genital Warts

Reference is made to the chart in Section II.B.2.b above showing response rates of non-genital warts that have been resistant to other forms of therapy, which vary from 58% to 100%. It is noted that three out of the four studies are retrospective, while one was a case series of 2.

Alopecia Areata

Reference is made to FDA's review of effectiveness data on SADBE in the treatment of alopecia areata in 1999, which summarized the available data at that time, citing reports by Tosti et al., (1996), Micali et al., (1996) and Orecchia et al., (1994), which gave response rates between 30% to 64%, and relapse rates between 50% and 70%.

Williams and Bigby's 2014 edition of Evidenced-Based Dermatology states:

- I found no systematic reviews. I found one RCT that involved small numbers of children. Tosti et al., compared SADBE, diphencyprone, minoxidil and placebo, finding a significant relationship between the age of the patients and the results. Complete hair regrowth was seen in 71.3% of adults, but in only 38.9% of children.
- Orecchia and Malagoli treated 28 unresponsive children under the age of 13 years with SADBE for 12 months. Thirty-two percent of the patients achieved

complete or cosmetically acceptable regrowth, and a further 21% achieved significant regrowth.

Delamere's Cochrane review of interventions in alopecia areata cited one study (Picoli 1995) that involved 30 subjects with severe alopecia areata randomly assigned to SADBE, lymphoblastoid interferon (IFN) or a combination of both. Variable treatment durations were used ranging from 12 to 32 weeks. The results at 6 months after discontinuation of therapy showed that 5/10 in the combination group, 2/10 in the SADBE group, and 2/10 in the IFN group achieved scores of 2 or 3 (full recovery with relapse within 6 months, and full/stable recovery with no relapse within 6 month, respectively).

In 2013, Shapiro summarized the literature experience, noting that topical immunotherapy of alopecia areata with SADBE and diphenylcyclopropenone gave similar results: success rate of 50 to 60% with a wide range of 9 to 87%. This is generally dependent on the severity and duration of disease and the heterogeneity of product source, but it is also possible that the variability is related to the compounding with a wide range of strengths used in treatment. Relapse after achieving significant regrowth develops in the majority of patients, with median time to relapse of 2½ years.

Herpes Labialis

There are no available data to support effectiveness of SADBE in the treatment of herpes labialis.

2. Whether the product compounded with this bulk drug substance is intended to be used in a serious or life-threatening disease

The proposed indications for product compounded with SADBE include alopecia areata, warts, and herpes labialis. These are not serious or life-threatening conditions.

3. Whether there are any alternative approved therapies that may be as effective or more effective.

The only FDA-approved therapy indicated for the treatment of alopecia areata is intralesional injection of corticosteroid suspensions (see above, Section II.B.2.d.). This form of therapy is not practical when the alopecia is widespread, as in the case of alopecia totalis or alopecia universalis, because each injection only produces a tuft of hair regrowth of approximately 0.5 cm^2. In addition, alopecia areata is also treated off-label with topical corticosteroids, minoxidil, anthralin, phototherapies, systemic corticosteroids, cyclosporine, sulfasalazine, or methotrexate.

There are approved therapies for non-genital cutaneous warts, but the contact sensitizers are generally reserved for the treatment of recalcitrant warts failing other treatment modalities, and as such, there are no approved alternative therapies for recalcitrant warts. In a Cochrane review of non-genital wart treatments by Kwok et al., (2012), it is noted that "none of the other reviewed treatments appeared safer or more effective than SA and

cryotherapy," and when these two treatments were compared, the "evidence remains more consistent for SA."

For the treatment of genital warts, there are approved drugs (podofilox gel and solution, imiquimod cream, and polyphenon E ointment), although solicitation of a contact dermatitis reaction in the treatment area with sensitizers poses additional challenges for management, making the use of SADBE not desirable.

There are FDA-approved therapies for the treatment of herpes labialis. Since data on the treatment effect of SADBE for herpes labialis are not available, effectiveness comparisons cannot be made.

Conclusions: Although there are no adequate and well controlled trials on SADBE, there appears to be evidence that this substance used in compounding for the treatment of recalcitrant warts and alopecia areata may be effective in a substantial proportion of patients.

The treatment response of recalcitrant cutaneous warts with SADBE topical immunotherapy is reported to range from 58% to 100%.

For alopecia areata treatment, topical immunotherapy with SADBE provides response rates reported in the order of 50% to 60%, but relapses are reported in the majority of patients. The variability of results is attributed primarily to factors like age, disease duration, and severity, but may also be related to the SADBE source and strengths used in the reports. Responses are lower for patients with a younger age of onset, longer duration of disease, and alopecia totalis/universalis. Because of the amount of evidence accumulated over time, Fitzpatrick's Dermatology in General Medicine (8th edition, 2012) states: "Although not approved by the FDA, topical immunotherapy seems to be the most effective therapeutic option with the best safety profile in the treatment of chronic severe alopecia areata." Currently the topical immunotherapy commonly used in medical practice for alopecia areata are SADBE and diphenylcyclopropenone.

No evidence is available to support effectiveness of SADBE in the treatment of herpes labialis.

D. Has the substance been used historically in compounding?

1. Length of time the substance has been used in pharmacy compounding

SADBE has been reported for use for over 30 years in pharmacy compounding.

2. The medical condition(s) it has been used to treat

SADBE has been reported for use primarily in the treatment of warts and alopecia areata (including alopecia totalis and alopecia universalis). There is a clinical study under recruitment on the "Safety and Efficacy of Squaric Acid Dibutyl Ester for the Treatment of Herpes Labialis" listed in ClinicalTrials.gov (NCT01971385).

3. How widespread its use has been

SADBE use has been reported in North and South America, Australia, as well as European and Asian countries.

4. Recognition of the substance in other countries or foreign pharmacopeias

Although SADBE is recognized globally in many countries, a search did not find this substance listed in the European, British, or Japanese Pharmacopeias.

Conclusions: SADBE has been compounded for use in the treatment of resistant non-genital warts and alopecia areata by practitioners for 30 to 40 years. Reports of its global use for these conditions have accumulated over time. There may also be novel uses such as for herpes labialis, but currently this use is still being studied and may be considered premature.

III. RECOMMENDATION

We recommend that SADBE be placed on the list of bulk drug substances in compounding under section 503A. Despite some concerns about stability and consistency in product quality, as well as lack of adequate nonclinical data, the substance has been in use in compounding for 30 to 40 years and has been adopted globally as a potentially useful form of topical immunotherapy for alopecia areata and recalcitrant warts by medical practitioners. Thus far, the adverse effects reported are related to its primary therapeutic effect as a contact sensitizer. There are some gaps in knowledge about long-term safety and use in specific populations such as pregnant and lactating women. However, given the lack of approved therapies indicated for recalcitrant warts and severe forms of alopecia areata (alopecia totalis and alopecia universalis), not listing SADBE could create obstacles to patient access, unless the drug product is obtained through an IND.

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DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Food and Drug Administration, Center for Drug Evaluation and Research
Division of Dermatologic and Dental Drug Products, HFD-540

Date: March 16, 1999

Subject: Review of Squaric Acid Dibutyl Ester, a Candidate for the Pharmacy Compounding Bulk List, With Selected References

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HFD-540 Review on Squaric Acid Dibutyl Ester

For the FDA Pharmacy Compounding Advisory Committee

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Revised: March 26, 1999

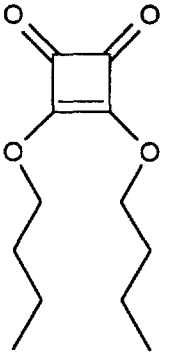
I. Introduction

The Division of Dermatologic and Dental Drug Products (HFD-540) has been charged with the review of squaric acid dibutyl ester (SADBE) for two indications: alopecia areata and verruca vulgaris (warts). Only published literature was used in the preparation of this review.

II. Chemical Characterization of SADBE

Identity

3,4-Dibutoxy-3-cyclobutene-1,2-dione
Dibutyl Squarate
Squaric Acid Dibutyl Ester
SADBE



CAS #	*2892-62-8*
Molecular Weight	*226.27*
Molecular Formula	*$C_{12}H_{18}O_4$*
Appearance	*Colorless to slightly yellow oily liquid*
Density	*0.9650 g/mL*
Refr. Index	*1.4943*
Boiling Point	*148-150° C @ 0.6 torr; 121-122° C @ 0.2 torr*
Flash Point	*>110 C*
Storage Precautions:	*Keep cold and away from moisture, protect from light*

The physical and spectroscopic properties of squaric acid dibutyl ester (SADBE) have been well characterized.

Stability

Squaric acid esters have been shown to be readily hydrolyzed in aqueous solutions, and are hydrolyzed in basic solution at a much higher rate than at acidic or neutral pH. No thermal

instability has been reported. The photochemical reactivity and stability traits of SADBE have not been reported in the literature; however, it is likely to be photochemically reactive based on the molecular structure.

Synthesis and Purity

Squaric acid was first prepared in 1959 by Cohen et al., and its first derivatives, dimethyl squarate and diethyl squarate, were reported in 1966 (Cohen and Cohen, 1966). SADBE is a neutral compound, which contains the unusual unsaturated, dicarbonyl-containing 4-carbon ring, which shows aromatic character. The alkoxy substituents are analogous to carboxylic acid esters, showing similar chemical behavior. Several methods of preparation have been reported in the chemical literature (Cohen and Cohen, 1966), and this material is available from several commercial suppliers, though the methods of production currently are not known. An investigation into the hydrolysis, contaminants, and degradants of this material has been published (Wilkerson et al., 1985).

Several domestic commercial sources of SADBE have been identified: Fisher Scientific (Acros Organics), Frinton Laboratories, Inc., and Sigma-Aldrich Co. Each has confirmed their knowledge of the identity or identities of the actual manufacturing site(s) for SADBE: all but one has declined to make this information public.

Literature on the syntheses of SADBE, refers in general to modern analytical methodology but provide few details as to the actual practices. These reports cite IR spectroscopy, UV spectroscopy, elemental analysis, gas chromatography and GC-mass spectrometry as the determinants of purity. While these are common techniques, they are not established quantitative methods for analysis of this material. The adequacy of these methods for determination of purity and levels of contaminants in SADBE cannot be assessed.

Assessment 1: Although squaric acid dibutyl ester is well characterized, it hydrolyzes readily in the presence of water. Since it is exquisitely sensitive to water, it should only be compounded in media in which there is no water. The impurity profile of SADBE may differ depending on the route of synthesis. SADBE used in compounding could vary significantly from SADBE used in literature studies in the level and types of impurities present; this could result in altered clinical properties and toxicities.

III. Safety of SADBE

A. Animal Toxicology

Squaric acid dibutylester is not mutagenic in the Ames assay nor does it cause the transformation of hamster kidney cells *in vitro* (Happle et al., 1980; Strobel & Röhrborn, 1980). The synthetic precursors of squaric acid, hexachlorobutadiene and tetrachlorocyclobutenedione show some carcinogenic activity (van Duuren et al., 1971; Kociba et al., 1977).

The ability of the dibutyl and diethyl esters to penetrate human or mouse skin *in vitro* has been investigated (Sherertz & Sloan, 1988). Diffusion of the diethyl ester was 4.5 fold higher than squaric acid and the dibutyl ester was 24-fold higher than squaric acid.

Guinea pigs have been sensitized to the dibutyl and diethyl ester derivatives of squaric acid by the application of 0.1 to 10% solutions (Noster et al., 1976; Happle et al., 1980; Avalos et al., 1989). The dibutyl ester appears to be more effective at sensitizing than the diethyl ester. The sensitization to the diethyl ester is specific in that animals sensitized to this ester are not sensitized to the other esters as well. In addition, these studies have shown that the dimethoxy (dimethyl), diethoxy (diethyl), diisopropoxy (diisopropyl), dihydroxy and phenylethoxy derivatives of squaric acid are strong irritants.

Assessment 2: SADBE is not mutagenic in the Ames assay. Mammalian genotoxicity, chronic toxicity, reproductive toxicity, and carcinogenicity studies have not been conducted with SADBE. Thus, it is not known what the potential toxicities of SADBE are in humans or whether it is likely to be teratogenic in humans.

B. Human Safety

There are no published reports of studies designed to systematically evaluate the safety of SADBE. In a comprehensive review of immunomodulatory therapy, Naldi et al. (1990) determined that the discussion of side effects was adequate in only half (5 out of 10) trials involving SADBE.

Although not always adequately characterized, the adverse events described in clinical studies reporting the use of SADBE for treatment of alopecia areata and warts have included: burning sensation immediately after application, dermatitis (localized to the application site or generalized), transient perioral burning after application, autoeczematization, persistent contact dermatitis on the primary site of sensitization (rare), severe generalized dermatitis, generalized pruritus without dermatitis, leukoderma, xerosis, scaling, edema of treated skin, scalp folliculitis, and systemic reactions with fever and arthralgias (see review by Rokhsar et al., 1998). Please see Table 1 regarding some of the published reports on side effects.

Table 1 - Side Effects of SADBE

Author	Journal	Year	Side Effect
Foley et al.	Am. J. Contact Derm.	1996	Severe eczematous reaction in 10/14 pts and disseminated reactions in 9/14
Nishioka et al.	Contact Derm.	1993	Benign lymphoplasia
Valsecchi et al.	Contact Derm.	1984	Depigmentation

Physicians and other health care workers, including compounding pharmacists, are at risk for SADBE sensitization. Persons handling the drug should exercise contact precautions and be careful not to inhale these potent sensitizers, as even trace amounts can cause severe allergic reactions. Unwitting exposure and re-exposure can lead to an unwanted adverse reaction that is

Assessment 5: Since its first clinical report in 1980, SADBE has been used as an experimental treatment alternative for alopecia areata and verruca vulgaris. Evidence for current widespread use is not apparent.

V. Available Evidence of Effectiveness

Alopecia areata and warts frequently resolve without any therapeutic intervention. For example, in a study of the natural history of alopecia areata, of 63 alopecia areata patients followed for one year without treatment, hair had regrown in all but 4 patients in one year, and in all but 1 patient after two years. The great majority had recovered by 3 months after their only office visit (Arnold, 1952). Alopecia areata with less than 25% involvement has a high incidence of spontaneous recovery, whereas more severe involvement has a lesser rate of recovery (Moschella and Hurley, 1992). Regarding the natural history of warts, a two-year study showed that two-thirds of warts regressed without treatment (Massing and Epstein, 1963).

Despite the necessity for a placebo arm in evaluating experimental therapies such as SADBE, much of the excitement generated about topical immunomodulators stems from studies that were either uncontrolled or internally controlled. Describing therapy for alopecia areata, Rook et al. state: "The widely conflicting claims for the success of many different measures merely reflect the very great variations in the spontaneous course of the disease."

Studies that demonstrate a "positive" result, such as regrowth of hair, is more likely to be submitted for publication or published than are studies with "negative" results. Therefore, the published literature may overstate the efficacy of novel therapies. Additionally, most clinical studies lack long-term follow-up, so the lasting treatment benefits cannot be evaluated.

Warts

Warts, caused by cutaneous infection with the human papillomavirus, are another very common dermatological ailment. Aside from cosmetic disfigurement, patients seek treatment for these lesions because plantar (foot) warts may cause pain on walking or interfere with gait, and warts on the fingers may interfere with manual dexterity. As with alopecia areata, therapy is not always effective, although the absence of a control arm precludes any definitive comparisons with other modalities.

Table 2 - Use of SADBE in Human Papillomavirus Infection

Author	Journal	Year	Disease	N	Treatment	Response/ITT
Paller et al.	AAD Academy Summer Meeting	1998	Verruca vulgaris in children	61	Sensitize 2% Treat 2-3X/wk c initial 0.2%	58% complete clearance p average of 7 wks
Iijima et al.	Dermatology	1993	Verruca vulgaris	20	Sensitize 2% Treat q week 0.1 or 0.01 %	60% after avg of 6 applications

Alopecia areata

To make sense of the efficacy of the use of topical sensitizers for the treatment of alopecia areata, Naldi et al., 1990, reviewed 26 papers on "published clinical trials on dinitrochlorobenzene, squaric acid dibutylester, and diphencyprone [DPCP] each published between January 1977 and January 1988." The authors of the paper stated, "According to our evaluation, the published literature is of limited use in defining the role of topical immunotherapy in alopecia areata. Half the studies examined used informal methods (uncontrolled or historically controlled trials)... In general, the studies that we examined had serious drawbacks in reporting critical procedures such as assessing treatment and selecting and following up patients...In conclusion, a definite role of topical immunotherapy for alopecia areata has yet to be established and this treatment should be offered only as an experimental modality..." To date, there have been at least 14 reports in the peer-reviewed English-language literature on the use of SADBE for treatment of alopecia areata. Three of the most recent studies are presented in Table 3.

Table 3 - Use of SADBE in Alopecia Areata

Author	Journal	Year	Disease	N	Treatment	Response/ITT	Ctrl
Tosti et al.	J. Am. Acad. Dermatol.	1996	Alopecia totalis in children	33		30.3% complete 70% relapse rate	No
Micali et al.	Int. J. Dermatol.	1996	Alopecia areata	144		64% with some regrowth	Yes
Orecchia et al	Pediatr. Dermatol.	1994	Alopecia areata in children <13 years	28	Weekly for 12 months	32.1% complete or acceptable 21.4% partial	No

More recently (in 1998) Rokhsar and his colleagues from the Department of Dermatology at N.Y.U. examined the efficacy of contact sensitizers in alopecia areata in a summary review of the literature. They present a more detailed study of the available literature on the use of SADBE to treat alopecia areata. Their overview of the data in the literature shows a response rate range from 29% to 87%. This includes a sum of both complete and partial responders. The weighted average response rate is 59%, which is similar to the response rate seen in the largest study by Micali et al. Interestingly, a relapse rate of 50-70% was seen in the patients even with continuation of treatment, suggesting that in many patients the response is temporary at best.

A tabular summary of the suggested role of immunomodulators (as gleaned from the leading dermatological textbooks) for the treatment of these disorders is presented in Table 4. There exist many therapeutic alternatives for alopecia areata and warts. The general consensus is that SADBE is currently a potentially useful experimental therapy for patients who fail more conventional therapy. It has shown a modicum of short-term efficacy, but additional well-controlled, long-term studies are needed to evaluate efficacy.

Assessment 6: Taking into account the available information, there is minimal evidence that SADBE is effective in the long-term treatment of alopecia areata or verruca.

Treatment of alopecia areata with SADBE may provide an increase in hair of variable cosmetic quality during treatment. This hair may be lost if therapy is stopped.

Table 4 - Perspectives on use of SADBE for Treatment of Alopecia Areata and for Warts

Reference	Disease	Treatment of Choice	Other Suggested Treatments	Role of SADBE in Therapeutic Armamentarium
Andrews' Diseases of the Skin: Clinical Dermatology, ed. by Arnold et al., Eighth edition (1990) (textbook)	Alopecia Areata—patchy involvement	Intralesional injections of corticosteroid	"None of the other various therapeutic approaches are clearly superior to corticosteroids"	SADBE: not discussed
	Alopecia Areata—totalis/universalis	Systemic (IM) steroids should be "seriously considered".		
	Common/ Plantar Warts	Treatment of choice not identified	A, B, C, D, E, F, G, H, I, J, K (not plantar warts), L, M	"It (SADBE) may be worth trying in very large and resistant warts."
Dermatology in General Medicine, ed. by Fitzpatrick et al., Third edition (1987) (textbook)	Alopecia Areata	Treatment of choice not identified	N (little efficacy), P, Q, R	"SADBE (nonmutagenic)...used successfully"; "local discomfort is a problem"
	Warts	Treatment of choice not identified	A, B, C, D, E, F, G, H, I, J, K, T, U, V	SADBE: may be suitable substitute, because it is negative in the Ames mutagenicity assay
Textbook of Dermatology, ed. by Rook et al., Fourth Edition (1986) (textbook)	Alopecia Areata	Treatment of choice not identified	O (unclear if regrowth is maintained), P (not helpful in alopecia totalis—except for eyebrows), W, X, Y, Z	Possible teratogenicity of DNCB (another topical sensitizer) led to SADBE substitution
	Warts	Treatment of choice not identified	B, C, D, L, L', E, H, I, J, T, A', B', ; avoid A,U (risk of scarring)	SADBE: not mentioned
Pediatric Dermatology, ed. by Schachner and Hansen, (1988) (textbook)	Alopecia Areata	Topical corticosteroids, alone or under occlusion; Intralesional corticosteroids	O (for severe involvement, unresponsive to topical or intralesional treatment)	SADBE: as effective as DNCB. "[SADBE] cannot be regarded as completely safe until extensive toxicologic evaluation has been completed."
	Warts	Treatment of choice not identified	A, B, C, G, K	

A: Electrodesiccation and curettage; **B**: Cryotherapy; **C**: Salicylic Acid; **D**: Lactic Acid; **E**: Trichloroacetic/ other caustic acids; **F**: Podophyllin; **G**: laser; **H**: 5-Fluoro-uracil; **I**: Retinoids; **J**: Interferon; **K**: Cantharin; **L**: Formalin; **L'**: Glutaraldehyde; **M**: Bleomycin; **N**: Topical corticosteroids; **O**: Systemic corticosteroids; **P**: Intralesional corticosteroids; **Q**: Anthralin; **R**: PUVA (Psoralen and UV-A); **S**: Inosiplex; **T**: Bleomycin; **U**: Surgical excision; **V**: Vaccination with autogenous-wart extracts; **W**: Ultraviolet radiation; **X**: Minoxidil; **Y**: Dithranol; **Z**: Zinc sulfate; **A'**: Levamisole; **B'**: Photodynamic inactivation; **C'**: Psychological methods (hypnosis)

VI. Conclusions

Assessment 1: Although squaric acid dibutyl ester is well characterized, it is also known to hydrolyze readily in the presence of water. Since it is so exquisitely sensitive to even small amounts of water, it should only be compounded in media in which there is no water. The impurity profile of SADBE may differ depending on the route of synthesis. SADBE used in compounding could vary significantly from SADBE used in literature studies in the level and types of impurities present; this could result in altered clinical properties and toxicities.

Assessment 2: SADBE is not mutagenic in the Ames assay. Mammalian genotoxicity, chronic toxicity, reproductive toxicity, and carcinogenicity studies have not been conducted with SADBE. Thus, it is not known what the potential toxicities of SADBE are in humans or whether it is likely to be teratogenic in humans.

Assessment 3: There is limited characterization of the human safety profile. Adverse side effects from exposure to SADBE include severe eczematous dermatitis, blistering, lymphoplasia and skin pigmentation changes.

Assessment 4: Many approved products are available for the treatment of verruca and alopecia areata.

Assessment 5: Since its first clinical report in 1980, SADBE has been used as an experimental treatment alternative for alopecia areata and verruca vulgaris. Evidence for current widespread use is not apparent.

Assessment 6: Taking into account the available information, there is minimal evidence that SADBE is effective in the long-term treatment of alopecia areata. Treatment of alopecia areata with SADBE may provide an increase in hair of variable cosmetic quality during treatment. This hair may be lost if therapy is stopped. SADBE is potentially a second or third-line treatment alternative for verruca vulgaris.

VII. Recommendation

Four criteria have been used to evaluate SADBE for inclusion on the bulk drug compounding list: (1) the chemical characterization of the substance; (2) the safety of the substance; (3) the historical use of the substance in pharmacy compounding; and (4) the available evidence of the substance's effectiveness or lack of effectiveness. Our evaluation of SADBE, based on a balanced assessment of each criterion in the context of the others, leads to our recommendation that it is not appropriate for SADBE to be included on the list.

The nonclinical studies conducted to date minimally evaluate the safety of squaric acid dibutylester. The studies do not characterize the potential toxicity to internal tissues nor do they characterize the dermal toxicity from long term topical application. Conclusions about the safety of SADBE cannot be made before such studies are done.

The evidence from historical use suggests that SADBE may be useful as second or third line therapy for warts and possibly as a therapy for alopecia areata. It is our impression that SADBE has become more commonly used as a topical sensitizer than dinitrochlorobenzene (DNCB), largely because the latter compound, available for toxicologic evaluation for more than 20 years, has well-established toxicities. The notion seems to be that the known toxicities of DNCB make it less attractive than the unknown toxicities of SADBE.

If SADBE is not placed on the list of bulk drug substances for compounding, a physician/investigator could still file an investigational new drug application (IND) for use of SADBE in humans. Pursuing this route would provide important and clinically relevant information about: (1) the chemistry of SADBE (i.e., its stability, its comparative solubility in different vehicles), (2) the safety profile – pharmacology/toxicology of SADBE (i.e., safety information about long-term dermal usage), and (3) the clinical side effect profile (i.e., risk of pigmentary and eczematous reactions).

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APPENDIX SECTION C

Summary Report

Squaric Acid Dibutyl Ester

Prepared for:

Food and Drug Administration
Clinical use of bulk drug substances nominated for inclusion on the 503B Bulks List
Grant number: 2U01FD005946

Prepared by:

University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI)
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January 2020

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REVIEW OF NOMINATION

Squaric acid dibutyl ester (SADBE; UNII code: 4RTO57VG65) was nominated for inclusion on the 503B Bulks List by the American Society of Health-System Pharmacists (ASHP) for the treatment of extensive alopecia areata and warts. The nominated administration methods include a topical solution at various strengths; initial treatment starts at 2% followed by and ranges from 0.0001-0.001% for maintenance dosing.

The reason provided for nomination to the 503B Bulks List is that currently there is no available topical sensitizer to treat alopecia areata.

METHODOLOGY

Background information

The national medicine registers of 13 countries and regions were searched to establish the availability of SADBE products in the United States (US) and around the world. The World Health Organization, the European Medicines Agency (EMA), and globalEDGE were used to identify regulatory agencies in non-US countries. The medicine registers of non-US regulatory agencies were selected for inclusion if they met the following criteria: freely accessible; able to search and retrieve results in English language; and desired information, specifically, product trade name, active ingredient, strength, form, route of administration (ROA), and approval status, provided in a useable format. Based on these criteria, the medicine registers of 13 countries/regions were searched: US, Canada, European Union (EU), United Kingdom (UK), Ireland, Belgium, Latvia, Australia, New Zealand, Saudi Arabia, Abu Dhabi, Hong Kong, and Namibia. Both the EMA and the national registers of select EU countries (Ireland, UK, Belgium, and Latvia) were searched because some medicines were authorized for use in the EU and not available in a member country and vice versa.

Each medicine register was searched for SADBE; name variations of SADBE were entered if the initial search retrieved no results. The following information from the search results of each register was recorded in a spreadsheet: product trade name; active ingredient(s); strength; form; ROA; status and/or schedule; approval date. Information was recorded only for products with strengths, forms and/or ROAs similar to those requested in the nominations.

In addition to the aforementioned medicine registers, the DrugBank database (version 5.1.4) and the Natural Medicines database were searched for availability of over-the-counter (OTC) products containing SADBE. The availability of OTC products (yes/no) in the US and the ROA of these products were recorded in a spreadsheet. Individual product information was not recorded.

Systematic literature review

Search strategy

Two databases (PubMed and Embase) were searched including any date through November 30, 2018. The search included a combination of (SADBE[TIAB] OR "squaric acid dibutyl ester"[TIAB] OR "dibutyl squarate"[TIAB]) AND (alopecia[TIAB] OR wart*[TIAB] OR topical[TIAB] OR derm*[TIAB] OR skin[TIAB] OR clinical[TIAB] OR therapy[TIAB] OR therapeutic*[TIAB] OR treatment[TIAB]) AND (humans[MeSH Terms] AND English[lang]) NOT "autistic disorder"[MeSH Terms]. Peer-reviewed articles as well as grey literature were included in the search. Search results from each database were exported to Covidence®, merged, and sorted for removal of duplicate citations.

Study selection

Articles were not excluded on the basis of study design. Articles were considered relevant based on the identification of a clinical use of SADBE or the implementation of SADBE in clinical practice. Articles were excluded if not in English, a clinical use was not identified, incorrect salt form, or if the study was not conducted in humans. Screening of all titles, abstracts, and full-text were conducted independently by two reviewers. All screening disagreements were reconciled by a third reviewer.

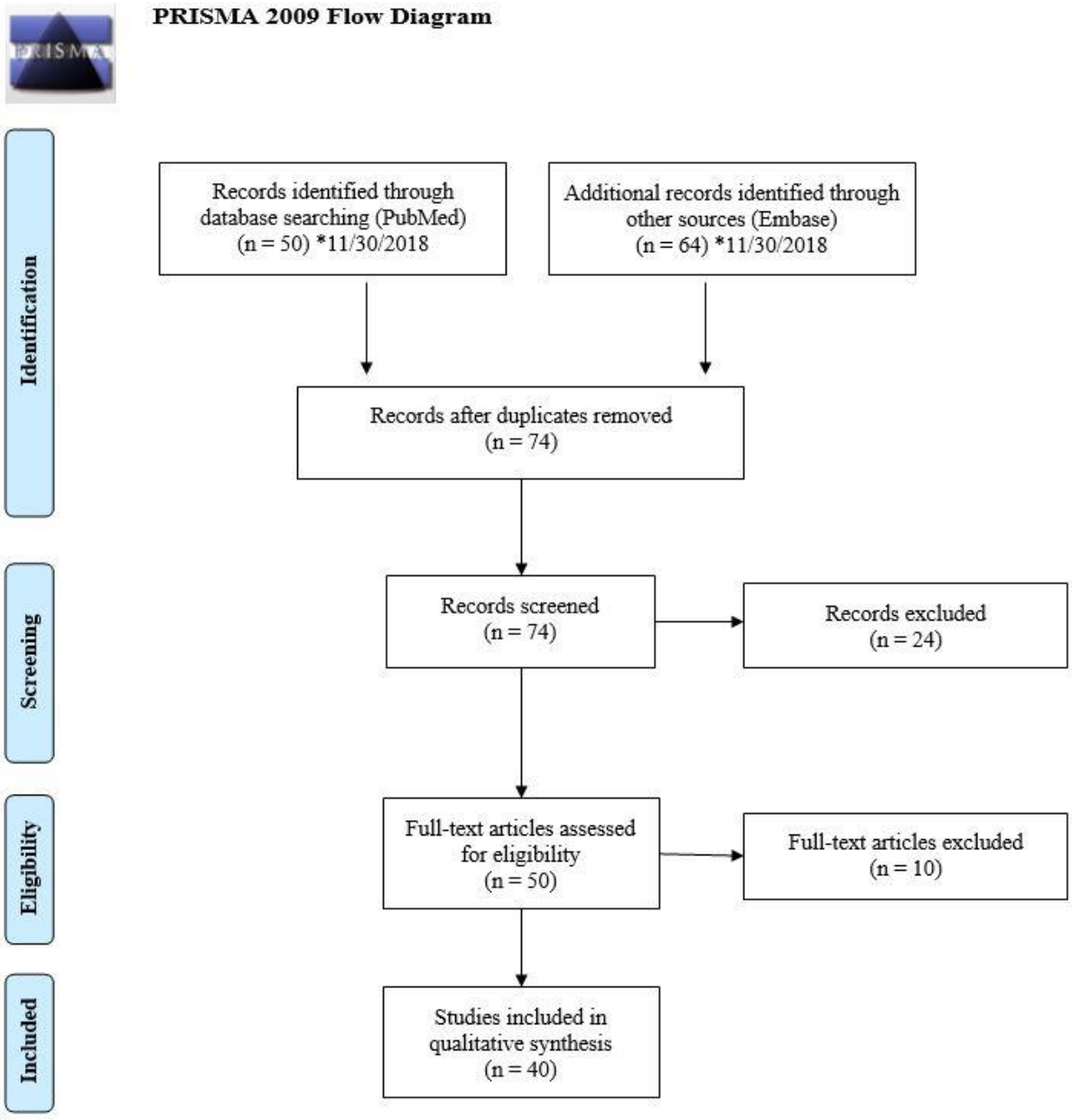
Data extraction

A standard data extraction form was used to collect study authors; article title; year published; journal title; country; indication for SADBE use; dose; strength; dosage form; ROA; frequency and duration of therapy; any combination therapy utilized; if applicable, formulation of compounded products; study design; and any discussion surrounding the use of SADBE compared to alternative therapies.

Results

Please refer to Figure 1.

Figure 1. Summary of literature screening and selection (PRISMA 2009 Flow Diagram)



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Outreach to medical specialists and specialty organizations

Using the indications from the nomination and the results of the literature review, one (1) medical specialty that would potentially use SADBE was identified: dermatology. Semi-structured interviews were conducted with subject matter experts within this specialty. Interviews lasted from 30-75 minutes and were conducted either via telephone or in-person. Criteria for selecting subject matter experts included recommendations provided by specialty professional associations, convenient geographic location, authorship within the specialty, or referral by an interviewee. Up to nine (9) interviews were conducted per substance. Two (2) experts were contacted for an interview, of which two (2) accepted and zero (0) declined interviews. The interview was recorded and transcribed via ©Rev.com. QSR International's Nvivo 12 software was utilized for qualitative data analysis. The University of Maryland, Baltimore IRB and the Food & Drug Administration RIHSC reviewed the study and found it to be exempt. Subject matter experts provided their oral informed consent to participate in interviews.

Survey

General professional medical associations and specialty associations for dermatology, identified from the nomination, literature review, and interview, were contacted to facilitate distribution of an online survey. A Google™ search was conducted to identify relevant professional associations within each specialty. Associations were included if their members are predominantly practitioners, national associations, and organizations focused on practice within the US. Organizations without practicing physicians and state or regional organizations were excluded. The association's website was searched in order to identify the email of the executive director, regulatory director, media director, association president, board members, or other key leaders within the organization to discuss survey participation. If no contact information was available, the "contact us" tab on the association website was used.

An online survey was created using Qualtrics® software (Provo, UT). The survey link was distributed to four (4) associations. If an association had more than one (1) substance with indications relevant to that specialty, substances were combined into one (1) survey with no more than 14 substances per survey. Table 1 highlights the associations that agreed to distribute the survey link and Table 2 includes the associations that declined to participate. Additionally, single substance surveys were created and posted on the project website which was shared with survey participants.

Participation was anonymous and voluntary. The estimated time for completion was 30 minutes with a target of 50 responses per survey. The Office of Management and Budget (OMB) approved this project.

Table 1. Participating associations

Specialty	**Association**
Dermatology	American Academy of Dermatology (AAD)
	American Society for Dermatologic Surgery (ASDS)

Table 2. Associations that declined participation

Specialty	Association	Reasons for Declining
Medicine	American Medical Association (AMA)	Failed to respond
	American Osteopathic Association (AOA)	Failed to respond

CURRENT AND HISTORIC USE

Summary of background information

- SADBE is not available as an FDA-approved product.
- SADBE is not available as an OTC product in the US.
- There is no current USP monograph for SADBE.
- SADBE is not available in any of the national medical registries searched.

Table 3. Currently approved products – US

No approved products in the US

Table 4. Currently approved products – select non-US countries and regions

No approved products in select non-US countries and regions

Summary of literature review

- Total number of studies included: 40 studies (11 descriptive, 20 experimental, and 9 observational).
- Most of the studies were from Italy (12) and the US (12).
- The most prevalent indication for SADBE was alopecia areata followed by warts.
- Application of SADBE ranged from once per month to daily application.
- Compounded SADBE products were identified from US and non-US studies that reflected the nominated indications and dosage form.

Table 5. Types of studies

Types of Studies	Number of Studies
Descriptive[1-11]	11
Experimental[12-31]	20
Observational[32-40]	9

Table 6. Number of studies by country

Country	Number of Studies
Finland[23]	1
Germany[21]	1
India[12]	1
Italy[2,16-18,20,25-29,32,40]	12
Japan[8,9,11,22,31]	5
Korea[7]	1
Poland[10]	1
Singapore[15,35,36]	3
The Netherlands[37]	1
UK[1,13]	2
US[3-6,14,19,24,30,33,34,38,39]	12
	Total US: 12 Total non-US Countries: 28

Table 7. Number of studies by combinations

No combination products were nominated

Table 8. Dosage by indication – US

Indication	Dose	Concentration	Dosage Form	ROA	Duration of Treatment
Alopecia areata[3-5,14,19,38,39], totalis[14], and universalis[19]	Apply once every 2 months – daily	0.0001-5%	Solution	Topical	2-24 months
Warts[5,24,30,33,34]	Apply once every month – daily	0.2-5%	Solution	Topical	1-12 months
Epidermodysplasia verruciformis[6]	–	0.2, 2%	Solution	Topical	48 hours

Abbreviations: "–", not mentioned; ROA, route of administration.

Table 9. Dosage by indication – non-US countries

Indication	Dose	Concentration	Dosage Form	ROA	Duration of Treatment
Alopecia areata[1,2,7-13,15,18,20,21,23,25,27-29,32,35-37,40], totalis[15,18,20,28,29], and universalis[18,20,28,29]	Apply once-twice weekly	0.00000001-3%	Solution	Topical	2 weeks-10 years
Warts[1,16,17,22,26,32]	Apply once every 2 weeks – twice weekly	0.0003-3%	Solution	Topical	2-18 months
Vitiligo vulgaris[31]	–	0.001-1%	–	Topical	–

Abbreviations: "–", not mentioned; ROA, route of administration.

Table 10. Compounded products – US

Indication	Publication Year	Compounding Method	Dosage Form	Final Strength
Alopecia areata[19], alopecia universalis[19]	1982	• SADBE dissolved in acetone	–	0.0001-2%

Abbreviations: "–", not mentioned.

Table 11. Compounded products – non-US countries

Indication	Compounding Method	Dosage Form	Final Strength
Alopecia areata[12,13,18,21,32]	• SADBE diluted/dissolved in acetone	Solution	0.000001-3%
Warts[17,32]	• SADBE diluted in acetone	Solution	0.01-3%

Summary of focus groups/interviews of medical experts and specialty organizations

Two (2) interviews were conducted.

Table 12. Overview of interviewees

Interviewee	Level of Training	Specialty	Current Practice Setting	Experience with SADBE	Interview Summary Response
DER_01	MD	Dermatology	Academic medical institution Faculty at a School of Medicine	Not specified	• Thinks of all topical irritants (DPCP, DNCP, SADBE) in the same category when used for alopecia areata
DER_04	MD	Dermatology Dermatology/Immunology	Independent consultant	Yes	• Not preferred choice • Better options exist; topical irritants typically last resort

Abbreviation: MD, Doctor of Medicine.

SADBE in alopecia areata

- One (1) interviewee considered SADBE the "last resort" treatment; the interviewee stated that there are other treatments that have more data to support efficacy over topical irritants like SADBE.

SADBE compared to other topical irritants

- One (1) interviewee stated they think of the topical irritants (DPCP, DNCP, and SADBE) in the same category, and while they are not molecularly related, they would be comparable regarding indications, ROA, and frequency of use. Said that prescribers can pick one, and if it does not work, then try a different one.
- One (1) interviewee stated that "The problem is you can't compare across studies. It's a concentration of what somebody used, the scenario under which somebody was sensitized, and then how they were then being challenged in order to try to look for outcomes, and all of these are going to be such small studies, they're not powered for statistical significance so I don't know that you could even try to say, 'Oh, well this one's better,' or, 'This one's stronger'. If you lined them all up, I could pick apart every one of those studies and tell you what the major flaws were, because the patient populations are also gonna be different and that's really important."
    - The interviewee reported if they were taking care of a patient and patient did not respond to one topical irritant, they would likely move to a different therapeutic class.
        - Did not think the difference between the sensitizing compounds was likely to be clinically meaningful.

Need for "office stock"

- One (1) interviewee confirmed that this is a product that would be administered in an office setting; while it is something that could have an individual patient-specific prescription for instead of being compounded in bulk, it would depend on how many patients are being seen.

Summary of survey results

Table 13. Characteristics of survey respondents [5 people responded to the survey.]

Board Certification	MD	No Response
Dermatology	2	0
No Response	0	3

Abbreviation: MD, Doctor of Medicine.

Table 14. Types of products used, prescribed, or recommended

Types of Products	Respondents, n (N=4[a])
Compounded	2
FDA-approved	0
Over-the-counter	0
Dietary	0
Unsure	0
No response	2

[a]Out of five (5) respondents, four (4) reported using, prescribing, or recommending SADBE products.

Table 15. Compounded use of SADBE in practice[a]

Indication	Strength	Dosing frequency	Dosage Form	ROA	Duration of Treatment	Patient Population
Alopecia areata	2%, 0.0001%	Weekly	Acetone-based solution	Topical	Regrowth of hair As long as beneficial	All Adult male and female
	1%	Daily	Solution			
Verruca plana Verruca vulgaris	2%, 0.2%	3x/week	Acetone-based solution	Topical	Clearance	All

Abbreviation: ROA, route of administration.
[a]Two (2) respondents.

Table 16. Indications for which SADBE is considered a standard therapy

Indication	Standard Therapy		
	Compounded, n (N=2)	**Non-compounded, n (N=0)**	**No Response, n (N=2)**
Alopecia areata	2	0	0
No response	0	0	2

Table 17. Reasons for using compounded product instead of the FDA-approved products

Reasons
"Only available compounded"
"No approve FDA product available"

Table 18. Change in frequency of compounded SADBE usage over the past 5 years

	Respondents, n (N=2)
No–use has remained consistent	1
Yes–I use it LESS often now	0
Yes–I use it MORE often now[a]	1

[a]One (1) respondent wrote "lack of other effective treatment."

Table 19. Do you stock non-patient specific compounded SADBE in your practice?

	Respondents, n (N=2)
No	2
Yes	0

Table 20. Questions related to stocking non-patient specific compounded SADBE

No survey respondents provided this information

CONCLUSION

SADBE (UNII code: 4RTO57VG65) was nominated for inclusion on the 503B Bulks list for the treatment of extensive alopecia areata and warts. The nominated administration methods include a topical solution at various strengths; initial treatment starts at 2% followed by and ranges from 0.0001-0.001% for maintenance dosing. SADBE is not available in any of the national medical registries reviewed and there is no USP monograph for this substance.

From the literature review conducted, the most prevalent indication in US and non-US studies was alopecia areata, followed by warts. Compounded SADBE products were identified from both the US and non-US studies that reflected the nominated indications (alopecia areata and warts) and dosage forms (topical solutions).

One (1) interviewee felt that topical irritants are "last resort" treatments for alopecia areata, and there are more options that have better data to support efficacy. Another interviewee stated that they consider all of the topical irritants in the same category as topical sensitizers for alopecia areata, and that they consider them to be comparable as far as indications, ROA, and frequency of use are concerned.

From the survey responses, four (4) out of five (5) respondents used SADBE. The most common indication respondents used compounded SADBE for was alopecia areata with one (1) respondent also using SADBE for verruca plana and verruca vulgaris. Lack of availability of SADBE as an FDA-approved product was the reason cited for using the compounded product. One (1) respondent reports using SADBE more often over the past five years due to "lack of other effective treatment."

APPENDICES

Appendix 1. References

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Appendix 2. Transcripts from focus groups/interviews

INTERVIEW_DER_04_SADBE

Interviewer 1: [redacted], but now we have SADBE, which essentially, my understanding is the same sort of mechanism as the DPCP, just a different option or just a different substance. In terms of choosing between one, you said that the DNCB was the one that you had the most familiarity with, so how do they all I guess in terms of ranking and in terms of efficacy, where do they each fall?

DER_04: Efficacy is a whole other ballgame. I suspect that what happens is depending on where you trained and who you trained with, you got to know one or the other of these in the same way dermatologists in general, they've got in their holster ... they know one class, one steroid, and they're real familiar with a couple of mid-potency non-fluoridated steroids and those are their go-to's. I think the same thing would probably happen here. I knew about DNCB, that was the one that I had some experience with but not a lot, because again, I didn't think there was an adequate data to support their use and what's coming down the pipe in vitiligo and alopecia areata is like ... oh my gosh, it's finally getting to be kind of an interesting space. I don't know who's using SADBE as opposed to DNCB or the one that we talked about before.

Interviewer 1: Okay.

DER_04: But I think they're all in the same category. The problem is you can't compare across studies. It's a concentration of what somebody used, the scenario under which somebody was sensitized, and then how they were then being challenged in order to try to look for outcomes, and all of these are going to be such small studies, they're not powered for statistical significance so I don't know that you could even try to say, "Oh, well this one's better," or, "This one's stronger." If you lined them all up, I could pick apart every one of those studies and tell you what the major flaws were, because the patient populations are also going to be different and that's really important.

DER_04: Alopecia areata, if it's been relatively short standing, it's a waxing and waning disease so people with early onset disease actually are going to respond better no matter what you have whereas if you progress and you're totalis or universalis and you have a [inaudible 00:02:30] meaning lots of hair occiput, there's like nothing we're going to do that's going to make those people better, in general.

Interviewer 1: Would you consider it to be something to where maybe if DNCB doesn't work, you could try SADBE and you would make it effect, or is it kind of a ... they all work very similarly and if one doesn't work, likely the whole group won't work?

DER_04: Yeah. If it was me taking care of a patient and they didn't respond to DNCB, I would likely move to a different therapeutic class, because I think that the differences between any of these sensitizing compounds within a class are not likely to be clinically meaningful. If they were responders to intralesional steroids or not responders to intralesional steroid, I would probably try to go towards either [inaudible 00:03:23] or something like this. I think these are really last resort treatments, frankly, because there are things that I think have more data to support their efficacy ahead of them in the queue.

DER_04: But that being said, patients who have these disorders, they are really devastated with the conditions, particularly women and they can get pretty desperate and they can have it for 20 to 30 years so they'll find a hair expert and there's a handful of them around and they'll continue to go find them. During the academy, if I get an opportunity this would be a good question to ask some of these people like [redacted] or [redacted] and see if they say what would you do? Are they ... Do you have one versus another that you like? I'll put that on my file of things I want to ask if I run into these people, and I will.

Interviewer 1: That would be great.

DER_04: They all go to the same ... we hang in the same club.

Interviewer 1: So then I guess, and I think we kind of already talked about this in relation to the other one, but this would be something that would be administered in the office, the patient would come in, you would administer it, you would have the various concentrations available and you would not have a patient do this at home on their own. Is that correct?

DER_04: Yeah. We had talked about that, although you made the point, Ashlee, that theoretically you could write a prescription and have it be an individual patient as opposed to a bulk compounded product. Part of it is how many of these patients are you taking care of? For somebody who is a hair expert, and believe me, if you're a hair expert, every dermatologist will send you their patients because we don't want to take care of these people. They're really ... they're hard. They're challenging patients. It takes a really long time and they can eat up your afternoon. One of them could be an hour while you go through all of this stuff with them. But they can be rewarding for people who really like it and take care of them. If you develop that expertise, they will beat a path to your door, because they don't have anywhere else to go.

Interviewer 1: Yeah. Okay. Honestly, I feel like we actually talked about this substance I think when we talked about DPCP, so I don't really have too much to add on in relation to this particular substance, because kind of from what you've said, it's already so similar and just kind of depends on which one somebody prefers as to whether or not they want to use this one or that one. Do you have anything else you want to add about any of the substances we've talked about today or anything that you think that we missed that we need to look into a little bit more?

DER_04: No. I think you got them.

Appendix 3. Survey instrument

Start of Block: Welcome Page

The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice. This survey is for **squaric acid dibutyl ester (SADBE)**. As a medical expert, we appreciate your input regarding the use of this substance in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

End of Block: Welcome Page

Start of Block: Squaric acid dibutyl ester (SADBE)

Q1. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- ☐ Compounded drug product
- ☐ FDA-approved drug product
- ☐ Over the counter drug product
- ☐ Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- ☐ Unsure

Skip To: Q13. If What type(s) of product(s) do you use, prescribe, or recommend for squaric acid dibutyl ester (SADBE)?... != Compounded drug product Is Not Selected

Skip To: Q2. If What type(s) of product(s) do you use, prescribe, or recommend for squaric acid dibutyl ester (SADBE)?... = Compounded drug product Is Selected

Display This Question:

If What type(s) of product(s) do you use, prescribe, or recommend for squaric acid dibutyl ester (SADBE)?... = Compounded drug product

Q2. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe)						
Condition 2 (please describe)						
Condition 3 (please describe)						
Condition 4 (please describe)						
Condition 5 (please describe)						

Q3. Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- ☐ Single
- ☐ Combination

Skip To: Q5. If Do you use compounded squaric acid dibutyl ester (SADBE) as a single agent active ingredient, or as on... != Combination Is Not Selected

Display This Question:

If Loop current: Do you use compounded squaric acid dibutyl ester (SADBE) as a single agent active ingredient, or as on... = Combination Is Selected

Q4. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

_____

Q5. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

_____

Q6. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

_____

Q7. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

- Yes - I use it **MORE** often now (briefly describe why)_____
- Yes - I use it **LESS** often now (briefly describe why)_____
- No - use has remained consistent

Q8. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

_____

Q9. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

- Yes
- No

Skip To: End of Block If Do you stock non-patient-specific compounded squaric acid dibutyl ester (SADBE) in your practice locat... = No

Display This Question:

If Do you stock non-patient-specific compounded squaric acid dibutyl ester (SADBE) in your practice locat... = Yes

Q10. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- ☐ Physician office
- ☐ Outpatient clinic
- ☐ Emergency room
- ☐ Operating room
- ☐ Inpatient ward
- ☐ Other (please describe) _____

Q11. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- ☐ Purchase from a compounding pharmacy
- ☐ Purchase from an outsourcing facility
- ☐ Compound the product yourself
- ☐ Other (please describe) _____

Q12. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- ☐ Convenience
- ☐ Emergencies
- ☐ Other (please describe) _____

Skip To: End of Block If Why do you keep a stock of non-patient-specific compounded squaric acid dibutyl ester (SADBE)? Please... = Convenience

Skip To: End of Block If Why do you keep a stock of non-patient-specific compounded squaric acid dibutyl ester (SADBE)? Please... = Emergencies

Skip To: End of Block If Why do you keep a stock of non-patient-specific compounded squaric acid dibutyl ester (SADBE)? Please... = Other (please describe)

Q13. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

_____

Q14. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

_____

End of Block: Squaric acid dibutyl ester (SADBE)

Start of Block: Background Information

Q15. What is your terminal clinical degree? Please check all that apply.

- ☐ Doctor of Medicine (MD)
- ☐ Doctor of Osteopathic Medicine (DO)
- ☐ Doctor of Medicine in Dentistry (DMD/DDS)
- ☐ Naturopathic Doctor (ND)
- ☐ Nurse Practitioner (NP)
- ☐ Physician Assistant (PA)
- ☐ Other (please describe) _____

Q16. Which of the following Board certification(s) do you hold? Please check all that apply.

- ☐ No Board certification
- ☐ Allergy and Immunology
- ☐ Anesthesiology
- ☐ Cardiovascular Disease
- ☐ Critical Care Medicine
- ☐ Dermatology
- ☐ Emergency Medicine
- ☐ Endocrinology, Diabetes and Metabolism
- ☐ Family Medicine
- ☐ Gastroenterology
- ☐ Hematology
- ☐ Infectious Disease
- ☐ Internal Medicine
- ☐ Medical Toxicology
- ☐ Naturopathic Doctor
- ☐ Naturopathic Physician
- ☐ Nephrology
- ☐ Neurology
- ☐ Obstetrics and Gynecology
- ☐ Oncology
- ☐ Ophthalmology
- ☐ Otolaryngology
- ☐ Pain Medicine
- ☐ Pediatrics
- ☐ Psychiatry

- ☐ Rheumatology
- ☐ Sleep Medicine
- ☐ Surgery (please describe) _____
- ☐ Urology
- ☐ Other (please describe) _____

End of Block: Background Information

Appendix 4. Raw survey data

See attached PDF for raw survey data.

Q144.
The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice.

There are **twelve (12)** substances contained in this survey. As a medical expert, we appreciate your input regarding the use of these substances in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

Q1. Which of the following substances do you use in your practice? Please check all that apply.

- [ ] Amphotericin B
- [ ] Boric acid
- [x] Cantharidin
- [x] Ciclopirox olamine
- [ ] Clioquinol
- [ ] Deoxy-d-glucose
- [ ] Diiodohydroxyquinoline
- [ ] Diphenylcyclopropenone (DPCP)
- [ ] Podophyllum
- [x] Podophyllum resin
- [x] Quinacrine
- [x] Squaric acid dibutyl ester (SADBE)
- [ ] None of the above

Q2. What type(s) of product(s) do you use, prescribe, or recommend for **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q3. Please list any conditions or diseases for which you use compounded **amphotericin B** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q4.

Do you use compounded **amphotericin B** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q5. Please list all combination products in which you use compounded **amphotericin B**.

This question was not displayed to the respondent.

Q6. For which, if any, diseases or conditions do you consider compounded **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q7. Does your specialty describe the use of compounded **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q8. Over the past 5 years, has the frequency in which you have used compounded **amphotericin B** changed?

This question was not displayed to the respondent.

Q9. Why do you use compounded **amphotericin B** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q10. Do you stock non-patient-specific compounded **amphotericin B** in your practice location?

This question was not displayed to the respondent.

Q11. In what practice location(s) do you stock non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q12. How do you obtain your stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q13. Why do you keep a stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q14. For which, if any, diseases or conditions do you consider **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q15. Does your specialty describe the use of **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q388. What type(s) of product(s) do you use, prescribe, or recommend for **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q389. Please list any conditions or diseases for which you use compounded **boric acid** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q390.
Do you use compounded **boric acid** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q391. Please list all combination products in which you use compounded **boric acid**.

This question was not displayed to the respondent.

Q392. For which, if any, diseases or conditions do you consider compounded **boric acid** standard therapy?

This question was not displayed to the respondent.

Q393. Does your specialty describe the use of compounded **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q394. Over the past 5 years, has the frequency in which you have used compounded **boric acid** changed?

This question was not displayed to the respondent.

Q395. Why do you use compounded **boric acid** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q396. Do you stock non-patient-specific compounded **boric acid** in your practice location?

This question was not displayed to the respondent.

Q397. In what practice location(s) do you stock non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q398. How do you obtain your stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q399. Why do you keep a stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q400. For which, if any, diseases or conditions do you consider **boric acid** standard therapy?

This question was not displayed to the respondent.

Q401. Does your specialty describe the use of **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q402. What type(s) of product(s) do you use, prescribe, or recommend for **cantharidin**? Please check all that apply.

- [x] Compounded drug product
- [ ] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q403. Please list any conditions or diseases for which you use compounded **cantharidin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe): Molluscum contagiosum	0.7%	q2wks	liquid	topical	Until resolved	Pediatric
Condition 2 (please describe): Verruca plana	0.7%	q2wks	liquid	topical	Until resolved	Pediatric / Adult
Condition 3 (please describe)						
Condition 4 (please describe)						

Condition 5 (please describe)

Condition 6 (please describe)

Condition 7 (please describe)

Condition 8 (please describe)

Q404.
Do you use compounded **cantharidin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [x] Single
- [ ] Combination

Q405. In which combination(s) do you use compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q406. For which, if any, diseases or conditions do you consider compounded **cantharidin** standard therapy?

Molluscum contagiosum

Q407. Does your specialty describe the use of compounded **cantharidin** in medical practice guidelines or other resources?

Yes

Q408. Over the past 5 years, has the frequency in which you have used compounded **cantharidin** changed?

- (•) Yes - I use it **MORE** often now (briefly describe why) More pediatric patients
- ( ) Yes - I use it **LESS** often now (briefly describe why)
- ( )

No - use has remained consistent

Q409. Why do you use compounded **cantharidin** instead of any FDA-approved drug product?

Painless. High degree of efficacy. Reduced risk of scarring. Applied in office / controlled setting.

Q410. Do you stock non-patient-specific compounded **cantharidin** in your practice location?

- (•) Yes
- ( ) No

Q411. In what practice location(s) do you stock non-patient-specific compounded **cantharidin**? Please check all that apply.

- [x] Physician office
- [x] Outpatient clinic
- [ ] Emergency room
- [ ] Operating room
- [ ] Inpatient ward
- [ ] Other (please describe)

Q412. How do you obtain your stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

- [x] Purchase from a compounding pharmacy
- [ ] Purchase from an outsourcing facility
- [ ] Compound the product yourself
- [ ] Other (please describe)

Q413. Why do you keep a stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

- [x] Convenience
- [ ] Emergencies
- [ ] Other (please describe)

Q414. For which, if any, diseases or conditions do you consider **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q415. Does your specialty describe the use of **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q416. What type(s) of product(s) do you use, prescribe, or recommend for **ciclopirox olamine**? Please check all that apply.

- [ ] Compounded drug product
- [x] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q417. Please list any conditions or diseases for which you use compounded **ciclopirox olamine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q418.
Do you use compounded **ciclopirox olamine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q419. In which combination(s) do you use compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q420. For which, if any, diseases or conditions do you consider compounded **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q421. Does your specialty describe the use of compounded **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q422. Over the past 5 years, has the frequency in which you have used compounded **ciclopirox olamine** changed?

This question was not displayed to the respondent.

Q423. Why do you use compounded **ciclopirox olamine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q424. Do you stock non-patient-specific compounded **ciclopirox olamine** in your practice location?

This question was not displayed to the respondent.

Q425. In what practice location(s) do you stock non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q426. How do you obtain your stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q427. Why do you keep a stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q428. For which, if any, diseases or conditions do you consider **ciclopirox olamine** standard therapy?

Onychomycosis, tinea pedis

Q429. Does your specialty describe the use of **ciclopirox olamine** in medical practice guidelines or other resources?

Yes

Q430. What type(s) of product(s) do you use, prescribe, or recommend for **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q431. Please list any conditions or diseases for which you use compounded **clioquinol** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q432.
Do you use compounded **clioquinol** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q433. In which combination(s) do you use compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q434. For which, if any, diseases or conditions do you consider compounded **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q435. Does your specialty describe the use of compounded **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q436. Over the past 5 years, has the frequency in which you have used compounded **clioquinol** changed?

This question was not displayed to the respondent.

Q437. Why do you use compounded **clioquinol** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q438. Do you stock non-patient-specific compounded **clioquinol** in your practice location?

This question was not displayed to the respondent.

Q439. In what practice location(s) do you stock non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q440. How do you obtain your stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q441. Why do you keep a stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q442. For which, if any, diseases or conditions do you consider **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q443. Does your specialty describe the use of **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q444. What type(s) of product(s) do you use, prescribe, or recommend for **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q445. Please list any conditions or diseases for which you use compounded **deoxy-d-glucose** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q446.
Do you use compounded **deoxy-d-glucose** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q447. In which combination(s) do you use compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q448. For which, if any, diseases or conditions do you consider compounded **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q449. Does your specialty describe the use of compounded **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q450. Over the past 5 years, has the frequency in which you have used compounded **deoxy-d-glucose** changed?

This question was not displayed to the respondent.

Q451. Why do you use compounded **deoxy-d-glucose** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q452. Do you stock non-patient-specific compounded **deoxy-d-glucose** in your practice location?

This question was not displayed to the respondent.

Q453. In what practice location(s) do you stock non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q454. How do you obtain your stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q455. Why do you keep a stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q456. For which, if any, diseases or conditions do you consider **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q457. Does your specialty describe the use of **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q458. What type(s) of product(s) do you use, prescribe, or recommend for **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q459. Please list any conditions or diseases for which you use compounded **diiodohydroxyquinoline** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q460.
Do you use compounded **diiodohydroxyquinoline** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q461. In which combination(s) do you use compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q462. For which, if any, diseases or conditions do you consider compounded **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q463. Does your specialty describe the use of compounded **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q464. Over the past 5 years, has the frequency in which you have used compounded **diiodohydroxyquinoline** changed?

This question was not displayed to the respondent.

Q465. Why do you use compounded **diiodohydroxyquinoline** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q466. Do you stock non-patient-specific compounded **diiodohydroxyquinoline** in your practice location?

This question was not displayed to the respondent.

Q467. In what practice location(s) do you stock non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q468. How do you obtain your stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q469. Why do you keep a stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q470. For which, if any, diseases or conditions do you consider **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q471. Does your specialty describe the use of **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q472. What type(s) of product(s) do you use, prescribe, or recommend for **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q473. Please list any conditions or diseases for which you use compounded **diphenylcyclopropenone (DPCP)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q474.
Do you use compounded **diphenylcyclopropenone (DPCP)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q475. Please list all combination products in which you use compounded **diphenylcyclopropenone (DPCP)**.

This question was not displayed to the respondent.

Q476. For which, if any, diseases or conditions do you consider compounded **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q477. Does your specialty describe the use of compounded **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q478. Over the past 5 years, has the frequency in which you have used compounded **diphenylcyclopropenone (DPCP)** changed?

This question was not displayed to the respondent.

Q479. Why do you use compounded **diphenylcyclopropenone (DPCP)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q480. Do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)** in your practice location?

This question was not displayed to the respondent.

Q481. In what practice location(s) do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q482. How do you obtain your stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q483. Why do you keep a stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q484. For which, if any, diseases or conditions do you consider **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q485. Does your specialty describe the use of **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q486. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q487. Please list any conditions or diseases for which you use compounded **podophyllum** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q488.
Do you use compounded **podophyllum** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q489. In which combination(s) do you use compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q490. For which, if any, diseases or conditions do you consider compounded **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q491. Does your specialty describe the use of compounded **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q492. Over the past 5 years, has the frequency in which you have used compounded **podophyllum** changed?

This question was not displayed to the respondent.

Q493. Why do you use compounded **podophyllum** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q494. Do you stock non-patient-specific compounded **podophyllum** in your practice location?

This question was not displayed to the respondent.

Q495. In what practice location(s) do you stock non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q496. How do you obtain your stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q497. Why do you keep a stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q498. For which, if any, diseases or conditions do you consider **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q499. Does your specialty describe the use of **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q500. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum resin**? Please check all that apply.

- [ ] Compounded drug product
- [x] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q501. Please list any conditions or diseases for which you use compounded **podophyllum resin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q502.
Do you use compounded **podophyllum resin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q503. In which combination(s) do you use compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q504. For which, if any, diseases or conditions do you consider compounded **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q505. Does your specialty describe the use of compounded **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q506. Over the past 5 years, has the frequency in which you have used compounded **podophyllum resin** changed?

This question was not displayed to the respondent.

Q507. Why do you use compounded **podophyllum resin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q508. Do you stock non-patient-specific compounded **podophyllum resin** in your practice location?

This question was not displayed to the respondent.

Q509. In what practice location(s) do you stock non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q510. How do you obtain your stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q511. Why do you keep a stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q512. For which, if any, diseases or conditions do you consider **podophyllum resin** standard therapy?

Condyloma acuminata

Q513. Does your specialty describe the use of **podophyllum resin** in medical practice guidelines or other resources?

Yes

Q529. What type(s) of product(s) do you use, prescribe, or recommend for **quinacrine**? Please check all that apply.

- [x] Compounded drug product
- [ ] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q530. Please list any conditions or diseases for which you use compounded **quinacrine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe): Lupus vulgaris	100mg	qd	tablet	po	indef	Adult
Condition 2 (please describe)						
Condition 3 (please describe)						
Condition 4 (please describe)						
Condition 5 (please describe)						
Condition 6 (please describe)						

Condition 7 (please describe)

Condition 8 (please describe)

Q531.
Do you use compounded **quinacrine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [x] Single
- [ ] Combination

Q532. Please list all combination products in which you use compounded **quinacrine**.

This question was not displayed to the respondent.

Q533. For which, if any, diseases or conditions do you consider compounded **quinacrine** standard therapy?

None (adjunct to hydroxychloroquine in recalcitrant cutaneous lupus)

Q534. Does your specialty describe the use of compounded **quinacrine** in medical practice guidelines or other resources?

Yes

Q535. Over the past 5 years, has the frequency in which you have used compounded **quinacrine** changed?

- ○ Yes - I use it **MORE** often now (briefly describe why)
- ◉ Yes - I use it **LESS** often now (briefly describe why) Shortage / unavailability
- ○ No - use has remained consistent

Q536. Why do you use compounded **quinacrine** instead of any FDA-approved drug product?

Only available via compounding.

Q537. Do you stock non-patient-specific compounded **quinacrine** in your practice location?

- ○ Yes
- ◉ No

Q538. In what practice location(s) do you stock non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q539. How do you obtain your stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q540. Why do you keep a stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q541. For which, if any, diseases or conditions do you consider **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q542. Does your specialty describe the use of **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q543. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- [x] Compounded drug product
- [ ] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q544. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe): Alopecia areata	2%, 0.0001%	qwk	acetone based solution	topical	Regrowth of hair	All
Condition 2 (please describe): Verruca plana / vulgaris	2%, 0.2%	tiw	acetone based solution	topical	clearance	All

Condition 3 (please describe)

Condition 4 (please describe)

Condition 5 (please describe)

Condition 6 (please describe)

Condition 7 (please describe)

Condition 8 (please describe)

Q545.
Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [x] Single
- [ ] Combination

Q546. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

This question was not displayed to the respondent.

Q547. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

Alopecia areata

Q548. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

Yes

Q549. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

- ○ Yes - I use it **MORE** often now (briefly describe why)
- ○ Yes - I use it **LESS** often now (briefly describe why)
- ◉ No - use has remained consistent

Q550. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

Only available compounded

Q551. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

- ○ Yes
- ◉ No

Q552. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q553. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q554. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q555. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q556. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q16. What is your terminal clinical degree? Please check all that apply.

- [x] Doctor of Medicine (MD)
- [ ] Doctor of Osteopathic Medicine (DO)
- [ ] Doctor of Medicine in Dentistry (DMD/DDS)
- [ ] Naturopathic Doctor (ND)
- [ ] Nurse Practitioner (NP)
- [ ] Physician Assistant (PA)
- [ ] Other (please describe)

Q17. Which of the following Board certification(s) do you hold? Please check all that apply.

- [ ] No Board certification
- [ ] Allergy and Immunology
- [ ] Anesthesiology
- [ ] Cardiovascular Disease
- [ ] Critical Care Medicine
- [x] Dermatology
- [ ] Emergency Medicine
- [ ] Endocrinology, Diabetes and Metabolism
- [ ] Family Medicine
- [ ] Gastroenterology
- [ ] Hematology
- [ ] Infectious Disease
- [ ] Internal Medicine
- [ ] Medical Toxicology
- [ ] Naturopathic Doctor
- [ ] Naturopathic Physician
- [ ] Nephrology
- [ ] Neurology
- [ ] Obstetrics and Gynecology
- [ ] Oncology
- [ ] Ophthalmology
- [ ] Otolaryngology
- [ ] Pain Medicine
- [ ] Pediatrics
- [ ] Psychiatry
- [ ] Rheumatology
- [ ] Sleep Medicine
- [ ] Surgery (please describe)
- [ ] Urology
- [ ] Other (please describe)

Q144.
The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice.

There are **twelve (12)** substances contained in this survey. As a medical expert, we appreciate your input regarding the use of these substances in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

Q1. Which of the following substances do you use in your practice? Please check all that apply.

- [ ] Amphotericin B
- [ ] Boric acid
- [ ] Cantharidin
- [ ] Ciclopirox olamine
- [ ] Clioquinol
- [x] Deoxy-d-glucose
- [ ] Diiodohydroxyquinoline
- [ ] Diphenylcyclopropenone (DPCP)
- [ ] Podophyllum
- [ ] Podophyllum resin
- [ ] Quinacrine
- [ ] Squaric acid dibutyl ester (SADBE)
- [ ] None of the above

Q2. What type(s) of product(s) do you use, prescribe, or recommend for **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q3. Please list any conditions or diseases for which you use compounded **amphotericin B** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q4.

Do you use compounded **amphotericin B** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q5. Please list all combination products in which you use compounded **amphotericin B**.

This question was not displayed to the respondent.

Q6. For which, if any, diseases or conditions do you consider compounded **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q7. Does your specialty describe the use of compounded **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q8. Over the past 5 years, has the frequency in which you have used compounded **amphotericin B** changed?

This question was not displayed to the respondent.

Q9. Why do you use compounded **amphotericin B** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q10. Do you stock non-patient-specific compounded **amphotericin B** in your practice location?

This question was not displayed to the respondent.

Q11. In what practice location(s) do you stock non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q12. How do you obtain your stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q13. Why do you keep a stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q14. For which, if any, diseases or conditions do you consider **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q15. Does your specialty describe the use of **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q388. What type(s) of product(s) do you use, prescribe, or recommend for **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q389. Please list any conditions or diseases for which you use compounded **boric acid** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q390.
Do you use compounded **boric acid** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q391. Please list all combination products in which you use compounded **boric acid**.

This question was not displayed to the respondent.

Q392. For which, if any, diseases or conditions do you consider compounded **boric acid** standard therapy?

This question was not displayed to the respondent.

Q393. Does your specialty describe the use of compounded **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q394. Over the past 5 years, has the frequency in which you have used compounded **boric acid** changed?

This question was not displayed to the respondent.

Q395. Why do you use compounded **boric acid** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q396. Do you stock non-patient-specific compounded **boric acid** in your practice location?

This question was not displayed to the respondent.

Q397. In what practice location(s) do you stock non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q398. How do you obtain your stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q399. Why do you keep a stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q400. For which, if any, diseases or conditions do you consider **boric acid** standard therapy?

This question was not displayed to the respondent.

Q401. Does your specialty describe the use of **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q402. What type(s) of product(s) do you use, prescribe, or recommend for **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q403. Please list any conditions or diseases for which you use compounded **cantharidin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q404.
Do you use compounded **cantharidin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q405. In which combination(s) do you use compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q406. For which, if any, diseases or conditions do you consider compounded **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q407. Does your specialty describe the use of compounded **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q408. Over the past 5 years, has the frequency in which you have used compounded **cantharidin** changed?

This question was not displayed to the respondent.

Q409. Why do you use compounded **cantharidin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q410. Do you stock non-patient-specific compounded **cantharidin** in your practice location?

This question was not displayed to the respondent.

Q411. In what practice location(s) do you stock non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q412. How do you obtain your stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q413. Why do you keep a stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q414. For which, if any, diseases or conditions do you consider **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q415. Does your specialty describe the use of **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q416. What type(s) of product(s) do you use, prescribe, or recommend for **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q417. Please list any conditions or diseases for which you use compounded **ciclopirox olamine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q418.
Do you use compounded **ciclopirox olamine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q419. In which combination(s) do you use compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q420. For which, if any, diseases or conditions do you consider compounded **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q421. Does your specialty describe the use of compounded **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q422. Over the past 5 years, has the frequency in which you have used compounded **ciclopirox olamine** changed?

This question was not displayed to the respondent.

Q423. Why do you use compounded **ciclopirox olamine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q424. Do you stock non-patient-specific compounded **ciclopirox olamine** in your practice location?

This question was not displayed to the respondent.

Q425. In what practice location(s) do you stock non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q426. How do you obtain your stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q427. Why do you keep a stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q428. For which, if any, diseases or conditions do you consider **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q429. Does your specialty describe the use of **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q430. What type(s) of product(s) do you use, prescribe, or recommend for **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q431. Please list any conditions or diseases for which you use compounded **clioquinol** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q432.
Do you use compounded **clioquinol** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q433. In which combination(s) do you use compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q434. For which, if any, diseases or conditions do you consider compounded **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q435. Does your specialty describe the use of compounded **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q436. Over the past 5 years, has the frequency in which you have used compounded **clioquinol** changed?

This question was not displayed to the respondent.

Q437. Why do you use compounded **clioquinol** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q438. Do you stock non-patient-specific compounded **clioquinol** in your practice location?

This question was not displayed to the respondent.

Q439. In what practice location(s) do you stock non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q440. How do you obtain your stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q441. Why do you keep a stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q442. For which, if any, diseases or conditions do you consider **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q443. Does your specialty describe the use of **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q444. What type(s) of product(s) do you use, prescribe, or recommend for **deoxy-d-glucose**? Please check all that apply.

- [x] Compounded drug product
- [ ] FDA-approved drug product

- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q445. Please list any conditions or diseases for which you use compounded **deoxy-d-glucose** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe)						
Condition 2 (please describe)						
Condition 3 (please describe)						
Condition 4 (please describe)						
Condition 5 (please describe)						

Q446.
Do you use compounded **deoxy-d-glucose** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [ ] Single
- [x] Combination

Q447. In which combination(s) do you use compounded **deoxy-d-glucose**? Please check all that apply.

- [ ] Deoxy-d-glucose 0.2% / Acyclovir 3% / Lidocaine 1%

- [ ] Deoxy-d-glucose 0.2% / Cimetidine 10% / Ibuprofen 2% / Lidocaine 5% / Salicylic acid 15%
- [ ] Other (please describe)

Q448. For which, if any, diseases or conditions do you consider compounded **deoxy-d-glucose** standard therapy?

Q449. Does your specialty describe the use of compounded **deoxy-d-glucose** in medical practice guidelines or other resources?

Q450. Over the past 5 years, has the frequency in which you have used compounded **deoxy-d-glucose** changed?

- ( ) Yes - I use it **MORE** often now (briefly describe why)
- ( ) Yes - I use it **LESS** often now (briefly describe why)
- (•) No - use has remained consistent

Q451. Why do you use compounded **deoxy-d-glucose** instead of any FDA-approved drug product?

0

Q452. Do you stock non-patient-specific compounded **deoxy-d-glucose** in your practice location?

- (•) Yes
- ( ) No

Q453. In what practice location(s) do you stock non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

- [ ] Physician office
- [ ] Outpatient clinic
- [ ] Emergency room
- [ ] Operating room
- [ ] Inpatient ward
- [ ] Other (please describe)

Q454. How do you obtain your stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

- [ ] Purchase from a compounding pharmacy
- [ ] Purchase from an outsourcing facility

- [ ] Compound the product yourself
- [ ] Other (please describe) [ ]

Q455. Why do you keep a stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

- [ ] Convenience
- [x] Emergencies
- [ ] Other (please describe) [ ]

Q456. For which, if any, diseases or conditions do you consider **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q457. Does your specialty describe the use of **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q458. What type(s) of product(s) do you use, prescribe, or recommend for **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q459. Please list any conditions or diseases for which you use compounded **diiodohydroxyquinoline** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q460.
Do you use compounded **diiodohydroxyquinoline** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q461. In which combination(s) do you use compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q462. For which, if any, diseases or conditions do you consider compounded **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q463. Does your specialty describe the use of compounded **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q464. Over the past 5 years, has the frequency in which you have used compounded **diiodohydroxyquinoline** changed?

This question was not displayed to the respondent.

Q465. Why do you use compounded **diiodohydroxyquinoline** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q466. Do you stock non-patient-specific compounded **diiodohydroxyquinoline** in your practice location?

This question was not displayed to the respondent.

Q467. In what practice location(s) do you stock non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q468. How do you obtain your stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q469. Why do you keep a stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q470. For which, if any, diseases or conditions do you consider **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q471. Does your specialty describe the use of **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q472. What type(s) of product(s) do you use, prescribe, or recommend for **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q473. Please list any conditions or diseases for which you use compounded **diphenylcyclopropenone (DPCP)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q474.
Do you use compounded **diphenylcyclopropenone (DPCP)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q475. Please list all combination products in which you use compounded **diphenylcyclopropenone (DPCP)**.

This question was not displayed to the respondent.

Q476. For which, if any, diseases or conditions do you consider compounded **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q477. Does your specialty describe the use of compounded **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q478. Over the past 5 years, has the frequency in which you have used compounded **diphenylcyclopropenone (DPCP)** changed?

This question was not displayed to the respondent.

Q479. Why do you use compounded **diphenylcyclopropenone (DPCP)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q480. Do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)** in your practice location?

This question was not displayed to the respondent.

Q481. In what practice location(s) do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q482. How do you obtain your stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q483. Why do you keep a stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q484. For which, if any, diseases or conditions do you consider **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q485. Does your specialty describe the use of **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q486. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q487. Please list any conditions or diseases for which you use compounded **podophyllum** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q488.
Do you use compounded **podophyllum** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q489. In which combination(s) do you use compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q490. For which, if any, diseases or conditions do you consider compounded **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q491. Does your specialty describe the use of compounded **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q492. Over the past 5 years, has the frequency in which you have used compounded **podophyllum** changed?

This question was not displayed to the respondent.

Q493. Why do you use compounded **podophyllum** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q494. Do you stock non-patient-specific compounded **podophyllum** in your practice location?

This question was not displayed to the respondent.

Q495. In what practice location(s) do you stock non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q496. How do you obtain your stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q497. Why do you keep a stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q498. For which, if any, diseases or conditions do you consider **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q499. Does your specialty describe the use of **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q500. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q501. Please list any conditions or diseases for which you use compounded **podophyllum resin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q502.
Do you use compounded **podophyllum resin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q503. In which combination(s) do you use compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q504. For which, if any, diseases or conditions do you consider compounded **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q505. Does your specialty describe the use of compounded **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q506. Over the past 5 years, has the frequency in which you have used compounded **podophyllum resin** changed?

This question was not displayed to the respondent.

Q507. Why do you use compounded **podophyllum resin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q508. Do you stock non-patient-specific compounded **podophyllum resin** in your practice location?

This question was not displayed to the respondent.

Q509. In what practice location(s) do you stock non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q510. How do you obtain your stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q511. Why do you keep a stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q512. For which, if any, diseases or conditions do you consider **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q513. Does your specialty describe the use of **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q529. What type(s) of product(s) do you use, prescribe, or recommend for **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q530. Please list any conditions or diseases for which you use compounded **quinacrine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q531.
Do you use compounded **quinacrine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q532. Please list all combination products in which you use compounded **quinacrine**.

This question was not displayed to the respondent.

Q533. For which, if any, diseases or conditions do you consider compounded **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q534. Does your specialty describe the use of compounded **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q535. Over the past 5 years, has the frequency in which you have used compounded **quinacrine** changed?

This question was not displayed to the respondent.

Q536. Why do you use compounded **quinacrine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q537. Do you stock non-patient-specific compounded **quinacrine** in your practice location?

This question was not displayed to the respondent.

Q538. In what practice location(s) do you stock non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q539. How do you obtain your stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q540. Why do you keep a stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q541. For which, if any, diseases or conditions do you consider **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q542. Does your specialty describe the use of **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q543. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q544. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q545.
Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q546. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

This question was not displayed to the respondent.

Q547. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q548. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q549. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

This question was not displayed to the respondent.

Q550. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q551. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

This question was not displayed to the respondent.

Q552. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q553. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q554. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q555. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q556. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q16. What is your terminal clinical degree? Please check all that apply.

This question was not displayed to the respondent.

Q17. Which of the following Board certification(s) do you hold? Please check all that apply.

This question was not displayed to the respondent.

Q144.
The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice.

There are **twelve (12)** substances contained in this survey. As a medical expert, we appreciate your input regarding the use of these substances in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

Q1. Which of the following substances do you use in your practice? Please check all that apply.

- [ ] Amphotericin B
- [ ] Boric acid
- [x] Cantharidin
- [ ] Ciclopirox olamine
- [ ] Clioquinol
- [ ] Deoxy-d-glucose
- [ ] Diiodohydroxyquinoline
- [x] Diphenylcyclopropenone (DPCP)
- [ ] Podophyllum
- [ ] Podophyllum resin
- [ ] Quinacrine
- [x] Squaric acid dibutyl ester (SADBE)
- [ ] None of the above

Q2. What type(s) of product(s) do you use, prescribe, or recommend for **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q3. Please list any conditions or diseases for which you use compounded **amphotericin B** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q4.

Do you use compounded **amphotericin B** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q5. Please list all combination products in which you use compounded **amphotericin B**.

This question was not displayed to the respondent.

Q6. For which, if any, diseases or conditions do you consider compounded **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q7. Does your specialty describe the use of compounded **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q8. Over the past 5 years, has the frequency in which you have used compounded **amphotericin B** changed?

This question was not displayed to the respondent.

Q9. Why do you use compounded **amphotericin B** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q10. Do you stock non-patient-specific compounded **amphotericin B** in your practice location?

This question was not displayed to the respondent.

Q11. In what practice location(s) do you stock non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q12. How do you obtain your stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q13. Why do you keep a stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q14. For which, if any, diseases or conditions do you consider **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q15. Does your specialty describe the use of **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q388. What type(s) of product(s) do you use, prescribe, or recommend for **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q389. Please list any conditions or diseases for which you use compounded **boric acid** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q390.
Do you use compounded **boric acid** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q391. Please list all combination products in which you use compounded **boric acid**.

This question was not displayed to the respondent.

Q392. For which, if any, diseases or conditions do you consider compounded **boric acid** standard therapy?

This question was not displayed to the respondent.

Q393. Does your specialty describe the use of compounded **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q394. Over the past 5 years, has the frequency in which you have used compounded **boric acid** changed?

This question was not displayed to the respondent.

Q395. Why do you use compounded **boric acid** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q396. Do you stock non-patient-specific compounded **boric acid** in your practice location?

This question was not displayed to the respondent.

Q397. In what practice location(s) do you stock non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q398. How do you obtain your stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q399. Why do you keep a stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q400. For which, if any, diseases or conditions do you consider **boric acid** standard therapy?

This question was not displayed to the respondent.

Q401. Does your specialty describe the use of **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q402. What type(s) of product(s) do you use, prescribe, or recommend for **cantharidin**? Please check all that apply.

- [x] Compounded drug product
- [x] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q403. Please list any conditions or diseases for which you use compounded **cantharidin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe): Molluscum			Colloid, solution	Topical		
Condition 2 (please describe): Warts						
Condition 3 (please describe)						
Condition 4 (please describe)						

Condition 5 (please describe)

Condition 6 (please describe)

Condition 7 (please describe)

Condition 8 (please describe)

Q404.
Do you use compounded **cantharidin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [x] Single
- [x] Combination

Q405. In which combination(s) do you use compounded **cantharidin**? Please check all that apply.

- [ ] Cantharidin 1% / Podophyllum resin 5% / Salicylic acid 30%
- [x] Other (please describe) Cantharidin/ salicylic acid

Q406. For which, if any, diseases or conditions do you consider compounded **cantharidin** standard therapy?

Molluscum, warts

Q407. Does your specialty describe the use of compounded **cantharidin** in medical practice guidelines or other resources?

Many journal articles, texts

Q408. Over the past 5 years, has the frequency in which you have used compounded **cantharidin** changed?

- ○ Yes - I use it **MORE** often now (briefly describe why)
- ◉ Yes - I use it **LESS** often now (briefly describe why) Compounding shortage
- ○ No - use has remained consistent

Q409. Why do you use compounded **cantharidin** instead of any FDA-approved drug product?

No FDA approved treatment

Q410. Do you stock non-patient-specific compounded **cantharidin** in your practice location?

- ◉ Yes
- ○ No

Q411. In what practice location(s) do you stock non-patient-specific compounded **cantharidin**? Please check all that apply.

- ☑ Physician office
- ☐ Outpatient clinic
- ☐ Emergency room
- ☐ Operating room
- ☐ Inpatient ward
- ☐ Other (please describe)

Q412. How do you obtain your stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

- ☑ Purchase from a compounding pharmacy
- ☐ Purchase from an outsourcing facility
- ☐ Compound the product yourself
- ☐ Other (please describe)

Q413. Why do you keep a stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

- ☑ Convenience
- ☐ Emergencies
- ☐ Other (please describe)

Q414. For which, if any, diseases or conditions do you consider **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q415. Does your specialty describe the use of **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q416. What type(s) of product(s) do you use, prescribe, or recommend for **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q417. Please list any conditions or diseases for which you use compounded **ciclopirox olamine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q418.
Do you use compounded **ciclopirox olamine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q419. In which combination(s) do you use compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q420. For which, if any, diseases or conditions do you consider compounded **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q421. Does your specialty describe the use of compounded **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q422. Over the past 5 years, has the frequency in which you have used compounded **ciclopirox olamine** changed?

This question was not displayed to the respondent.

Q423. Why do you use compounded **ciclopirox olamine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q424. Do you stock non-patient-specific compounded **ciclopirox olamine** in your practice location?

This question was not displayed to the respondent.

Q425. In what practice location(s) do you stock non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q426. How do you obtain your stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q427. Why do you keep a stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q428. For which, if any, diseases or conditions do you consider **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q429. Does your specialty describe the use of **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q430. What type(s) of product(s) do you use, prescribe, or recommend for **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q431. Please list any conditions or diseases for which you use compounded **clioquinol** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q432.
Do you use compounded **clioquinol** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q433. In which combination(s) do you use compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q434. For which, if any, diseases or conditions do you consider compounded **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q435. Does your specialty describe the use of compounded **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q436. Over the past 5 years, has the frequency in which you have used compounded **clioquinol** changed?

This question was not displayed to the respondent.

Q437. Why do you use compounded **clioquinol** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q438. Do you stock non-patient-specific compounded **clioquinol** in your practice location?

This question was not displayed to the respondent.

Q439. In what practice location(s) do you stock non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q440. How do you obtain your stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q441. Why do you keep a stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q442. For which, if any, diseases or conditions do you consider **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q443. Does your specialty describe the use of **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q444. What type(s) of product(s) do you use, prescribe, or recommend for **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q445. Please list any conditions or diseases for which you use compounded **deoxy-d-glucose** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q446.
Do you use compounded **deoxy-d-glucose** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q447. In which combination(s) do you use compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q448. For which, if any, diseases or conditions do you consider compounded **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q449. Does your specialty describe the use of compounded **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q450. Over the past 5 years, has the frequency in which you have used compounded **deoxy-d-glucose** changed?

This question was not displayed to the respondent.

Q451. Why do you use compounded **deoxy-d-glucose** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q452. Do you stock non-patient-specific compounded **deoxy-d-glucose** in your practice location?

This question was not displayed to the respondent.

Q453. In what practice location(s) do you stock non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q454. How do you obtain your stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q455. Why do you keep a stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q456. For which, if any, diseases or conditions do you consider **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q457. Does your specialty describe the use of **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q458. What type(s) of product(s) do you use, prescribe, or recommend for **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q459. Please list any conditions or diseases for which you use compounded **diiodohydroxyquinoline** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q460.
Do you use compounded **diiodohydroxyquinoline** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q461. In which combination(s) do you use compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q462. For which, if any, diseases or conditions do you consider compounded **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q463. Does your specialty describe the use of compounded **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q464. Over the past 5 years, has the frequency in which you have used compounded **diiodohydroxyquinoline** changed?

This question was not displayed to the respondent.

Q465. Why do you use compounded **diiodohydroxyquinoline** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q466. Do you stock non-patient-specific compounded **diiodohydroxyquinoline** in your practice location?

This question was not displayed to the respondent.

Q467. In what practice location(s) do you stock non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q468. How do you obtain your stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q469. Why do you keep a stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q470. For which, if any, diseases or conditions do you consider **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q471. Does your specialty describe the use of **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q472. What type(s) of product(s) do you use, prescribe, or recommend for **diphenylcyclopropenone (DPCP)**? Please check all that apply.

- [x] Compounded drug product
- [x] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q473. Please list any conditions or diseases for which you use compounded **diphenylcyclopropenone (DPCP)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q474.
Do you use compounded **diphenylcyclopropenone (DPCP)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q475. Please list all combination products in which you use compounded **diphenylcyclopropenone (DPCP)**.

This question was not displayed to the respondent.

Q476. For which, if any, diseases or conditions do you consider compounded **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q477. Does your specialty describe the use of compounded **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q478. Over the past 5 years, has the frequency in which you have used compounded **diphenylcyclopropenone (DPCP)** changed?

This question was not displayed to the respondent.

Q479. Why do you use compounded **diphenylcyclopropenone (DPCP)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q480. Do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)** in your practice location?

This question was not displayed to the respondent.

Q481. In what practice location(s) do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q482. How do you obtain your stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q483. Why do you keep a stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q484. For which, if any, diseases or conditions do you consider **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q485. Does your specialty describe the use of **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q486. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q487. Please list any conditions or diseases for which you use compounded **podophyllum** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q488.
Do you use compounded **podophyllum** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q489. In which combination(s) do you use compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q490. For which, if any, diseases or conditions do you consider compounded **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q491. Does your specialty describe the use of compounded **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q492. Over the past 5 years, has the frequency in which you have used compounded **podophyllum** changed?

This question was not displayed to the respondent.

Q493. Why do you use compounded **podophyllum** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q494. Do you stock non-patient-specific compounded **podophyllum** in your practice location?

This question was not displayed to the respondent.

Q495. In what practice location(s) do you stock non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q496. How do you obtain your stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q497. Why do you keep a stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q498. For which, if any, diseases or conditions do you consider **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q499. Does your specialty describe the use of **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q500. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q501. Please list any conditions or diseases for which you use compounded **podophyllum resin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q502.
Do you use compounded **podophyllum resin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q503. In which combination(s) do you use compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q504. For which, if any, diseases or conditions do you consider compounded **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q505. Does your specialty describe the use of compounded **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q506. Over the past 5 years, has the frequency in which you have used compounded **podophyllum resin** changed?

This question was not displayed to the respondent.

Q507. Why do you use compounded **podophyllum resin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q508. Do you stock non-patient-specific compounded **podophyllum resin** in your practice location?

This question was not displayed to the respondent.

Q509. In what practice location(s) do you stock non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q510. How do you obtain your stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q511. Why do you keep a stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q512. For which, if any, diseases or conditions do you consider **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q513. Does your specialty describe the use of **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q529. What type(s) of product(s) do you use, prescribe, or recommend for **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q530. Please list any conditions or diseases for which you use compounded **quinacrine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q531.
Do you use compounded **quinacrine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q532. Please list all combination products in which you use compounded **quinacrine**.

This question was not displayed to the respondent.

Q533. For which, if any, diseases or conditions do you consider compounded **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q534. Does your specialty describe the use of compounded **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q535. Over the past 5 years, has the frequency in which you have used compounded **quinacrine** changed?

This question was not displayed to the respondent.

Q536. Why do you use compounded **quinacrine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q537. Do you stock non-patient-specific compounded **quinacrine** in your practice location?

This question was not displayed to the respondent.

Q538. In what practice location(s) do you stock non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q539. How do you obtain your stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q540. Why do you keep a stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q541. For which, if any, diseases or conditions do you consider **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q542. Does your specialty describe the use of **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q543. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q544. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q545.
Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q546. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

This question was not displayed to the respondent.

Q547. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q548. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q549. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

This question was not displayed to the respondent.

Q550. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q551. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

This question was not displayed to the respondent.

Q552. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q553. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q554. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q555. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q556. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q16. What is your terminal clinical degree? Please check all that apply.

This question was not displayed to the respondent.

Q17. Which of the following Board certification(s) do you hold? Please check all that apply.

This question was not displayed to the respondent.

Q144.
The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice.

There are **twelve (12)** substances contained in this survey. As a medical expert, we appreciate your input regarding the use of these substances in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

Q1. Which of the following substances do you use in your practice? Please check all that apply.

- [ ] Amphotericin B
- [ ] Boric acid
- [x] Cantharidin
- [x] Ciclopirox olamine
- [ ] Clioquinol
- [ ] Deoxy-d-glucose
- [ ] Diiodohydroxyquinoline
- [x] Diphenylcyclopropenone (DPCP)
- [x] Podophyllum
- [x] Podophyllum resin
- [ ] Quinacrine
- [x] Squaric acid dibutyl ester (SADBE)
- [ ] None of the above

Q2. What type(s) of product(s) do you use, prescribe, or recommend for **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q3. Please list any conditions or diseases for which you use compounded **amphotericin B** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q4.
Do you use compounded **amphotericin B** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q5. Please list all combination products in which you use compounded **amphotericin B**.

This question was not displayed to the respondent.

Q6. For which, if any, diseases or conditions do you consider compounded **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q7. Does your specialty describe the use of compounded **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q8. Over the past 5 years, has the frequency in which you have used compounded **amphotericin B** changed?

This question was not displayed to the respondent.

Q9. Why do you use compounded **amphotericin B** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q10. Do you stock non-patient-specific compounded **amphotericin B** in your practice location?

This question was not displayed to the respondent.

Q11. In what practice location(s) do you stock non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q12. How do you obtain your stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q13. Why do you keep a stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q14. For which, if any, diseases or conditions do you consider **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q15. Does your specialty describe the use of **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q388. What type(s) of product(s) do you use, prescribe, or recommend for **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q389. Please list any conditions or diseases for which you use compounded **boric acid** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q390.
Do you use compounded **boric acid** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q391. Please list all combination products in which you use compounded **boric acid**.

This question was not displayed to the respondent.

Q392. For which, if any, diseases or conditions do you consider compounded **boric acid** standard therapy?

This question was not displayed to the respondent.

Q393. Does your specialty describe the use of compounded **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q394. Over the past 5 years, has the frequency in which you have used compounded **boric acid** changed?

This question was not displayed to the respondent.

Q395. Why do you use compounded **boric acid** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q396. Do you stock non-patient-specific compounded **boric acid** in your practice location?

This question was not displayed to the respondent.

Q397. In what practice location(s) do you stock non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q398. How do you obtain your stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q399. Why do you keep a stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q400. For which, if any, diseases or conditions do you consider **boric acid** standard therapy?

This question was not displayed to the respondent.

Q401. Does your specialty describe the use of **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q402. What type(s) of product(s) do you use, prescribe, or recommend for **cantharidin**? Please check all that apply.

- [x] Compounded drug product

- [ ] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q403. Please list any conditions or diseases for which you use compounded **cantharidin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q404.
Do you use compounded **cantharidin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q405. In which combination(s) do you use compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q406. For which, if any, diseases or conditions do you consider compounded **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q407. Does your specialty describe the use of compounded **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q408. Over the past 5 years, has the frequency in which you have used compounded **cantharidin** changed?

This question was not displayed to the respondent.

Q409. Why do you use compounded **cantharidin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q410. Do you stock non-patient-specific compounded **cantharidin** in your practice location?

This question was not displayed to the respondent.

Q411. In what practice location(s) do you stock non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q412. How do you obtain your stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q413. Why do you keep a stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q414. For which, if any, diseases or conditions do you consider **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q415. Does your specialty describe the use of **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q416. What type(s) of product(s) do you use, prescribe, or recommend for **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q417. Please list any conditions or diseases for which you use compounded **ciclopirox olamine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q418.
Do you use compounded **ciclopirox olamine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q419. In which combination(s) do you use compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q420. For which, if any, diseases or conditions do you consider compounded **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q421. Does your specialty describe the use of compounded **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q422. Over the past 5 years, has the frequency in which you have used compounded **ciclopirox olamine** changed?

This question was not displayed to the respondent.

Q423. Why do you use compounded **ciclopirox olamine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q424. Do you stock non-patient-specific compounded **ciclopirox olamine** in your practice location?

This question was not displayed to the respondent.

Q425. In what practice location(s) do you stock non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q426. How do you obtain your stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q427. Why do you keep a stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q428. For which, if any, diseases or conditions do you consider **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q429. Does your specialty describe the use of **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q430. What type(s) of product(s) do you use, prescribe, or recommend for **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q431. Please list any conditions or diseases for which you use compounded **clioquinol** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q432.
Do you use compounded **clioquinol** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q433. In which combination(s) do you use compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q434. For which, if any, diseases or conditions do you consider compounded **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q435. Does your specialty describe the use of compounded **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q436. Over the past 5 years, has the frequency in which you have used compounded **clioquinol** changed?

This question was not displayed to the respondent.

Q437. Why do you use compounded **clioquinol** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q438. Do you stock non-patient-specific compounded **clioquinol** in your practice location?

This question was not displayed to the respondent.

Q439. In what practice location(s) do you stock non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q440. How do you obtain your stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q441. Why do you keep a stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q442. For which, if any, diseases or conditions do you consider **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q443. Does your specialty describe the use of **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q444. What type(s) of product(s) do you use, prescribe, or recommend for **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q445. Please list any conditions or diseases for which you use compounded **deoxy-d-glucose** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q446.
Do you use compounded **deoxy-d-glucose** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q447. In which combination(s) do you use compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q448. For which, if any, diseases or conditions do you consider compounded **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q449. Does your specialty describe the use of compounded **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q450. Over the past 5 years, has the frequency in which you have used compounded **deoxy-d-glucose** changed?

This question was not displayed to the respondent.

Q451. Why do you use compounded **deoxy-d-glucose** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q452. Do you stock non-patient-specific compounded **deoxy-d-glucose** in your practice location?

This question was not displayed to the respondent.

Q453. In what practice location(s) do you stock non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q454. How do you obtain your stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q455. Why do you keep a stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q456. For which, if any, diseases or conditions do you consider **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q457. Does your specialty describe the use of **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q458. What type(s) of product(s) do you use, prescribe, or recommend for **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q459. Please list any conditions or diseases for which you use compounded **diiodohydroxyquinoline** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q460.
Do you use compounded **diiodohydroxyquinoline** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q461. In which combination(s) do you use compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q462. For which, if any, diseases or conditions do you consider compounded **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q463. Does your specialty describe the use of compounded **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q464. Over the past 5 years, has the frequency in which you have used compounded **diiodohydroxyquinoline** changed?

This question was not displayed to the respondent.

Q465. Why do you use compounded **diiodohydroxyquinoline** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q466. Do you stock non-patient-specific compounded **diiodohydroxyquinoline** in your practice location?

This question was not displayed to the respondent.

Q467. In what practice location(s) do you stock non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q468. How do you obtain your stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q469. Why do you keep a stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q470. For which, if any, diseases or conditions do you consider **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q471. Does your specialty describe the use of **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q472. What type(s) of product(s) do you use, prescribe, or recommend for **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q473. Please list any conditions or diseases for which you use compounded **diphenylcyclopropenone (DPCP)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q474.
Do you use compounded **diphenylcyclopropenone (DPCP)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q475. Please list all combination products in which you use compounded **diphenylcyclopropenone (DPCP)**.

This question was not displayed to the respondent.

Q476. For which, if any, diseases or conditions do you consider compounded **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q477. Does your specialty describe the use of compounded **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q478. Over the past 5 years, has the frequency in which you have used compounded **diphenylcyclopropenone (DPCP)** changed?

This question was not displayed to the respondent.

Q479. Why do you use compounded **diphenylcyclopropenone (DPCP)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q480. Do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)** in your practice location?

This question was not displayed to the respondent.

Q481. In what practice location(s) do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q482. How do you obtain your stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q483. Why do you keep a stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q484. For which, if any, diseases or conditions do you consider **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q485. Does your specialty describe the use of **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q486. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q487. Please list any conditions or diseases for which you use compounded **podophyllum** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q488.
Do you use compounded **podophyllum** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q489. In which combination(s) do you use compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q490. For which, if any, diseases or conditions do you consider compounded **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q491. Does your specialty describe the use of compounded **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q492. Over the past 5 years, has the frequency in which you have used compounded **podophyllum** changed?

This question was not displayed to the respondent.

Q493. Why do you use compounded **podophyllum** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q494. Do you stock non-patient-specific compounded **podophyllum** in your practice location?

This question was not displayed to the respondent.

Q495. In what practice location(s) do you stock non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q496. How do you obtain your stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q497. Why do you keep a stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q498. For which, if any, diseases or conditions do you consider **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q499. Does your specialty describe the use of **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q500. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q501. Please list any conditions or diseases for which you use compounded **podophyllum resin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q502.
Do you use compounded **podophyllum resin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q503. In which combination(s) do you use compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q504. For which, if any, diseases or conditions do you consider compounded **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q505. Does your specialty describe the use of compounded **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q506. Over the past 5 years, has the frequency in which you have used compounded **podophyllum resin** changed?

This question was not displayed to the respondent.

Q507. Why do you use compounded **podophyllum resin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q508. Do you stock non-patient-specific compounded **podophyllum resin** in your practice location?

This question was not displayed to the respondent.

Q509. In what practice location(s) do you stock non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q510. How do you obtain your stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q511. Why do you keep a stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q512. For which, if any, diseases or conditions do you consider **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q513. Does your specialty describe the use of **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q529. What type(s) of product(s) do you use, prescribe, or recommend for **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q530. Please list any conditions or diseases for which you use compounded **quinacrine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q531.
Do you use compounded **quinacrine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q532. Please list all combination products in which you use compounded **quinacrine**.

This question was not displayed to the respondent.

Q533. For which, if any, diseases or conditions do you consider compounded **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q534. Does your specialty describe the use of compounded **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q535. Over the past 5 years, has the frequency in which you have used compounded **quinacrine** changed?

This question was not displayed to the respondent.

Q536. Why do you use compounded **quinacrine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q537. Do you stock non-patient-specific compounded **quinacrine** in your practice location?

This question was not displayed to the respondent.

Q538. In what practice location(s) do you stock non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q539. How do you obtain your stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q540. Why do you keep a stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q541. For which, if any, diseases or conditions do you consider **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q542. Does your specialty describe the use of **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q543. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q544. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q545.
Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q546. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

This question was not displayed to the respondent.

Q547. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q548. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q549. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

This question was not displayed to the respondent.

Q550. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q551. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

This question was not displayed to the respondent.

Q552. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q553. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q554. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q555. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q556. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q16. What is your terminal clinical degree? Please check all that apply.

This question was not displayed to the respondent.

Q17. Which of the following Board certification(s) do you hold? Please check all that apply.

This question was not displayed to the respondent.

Q144.
The University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI), in collaboration with the Food and Drug Administration (FDA), is conducting research regarding the use of certain bulk drug substances nominated for use in compounding by outsourcing facilities under section 503B of the Federal Food, Drug, and Cosmetic Act. In particular, we are interested in the current and historic use of these substances in clinical practice.

There are **twelve (12)** substances contained in this survey. As a medical expert, we appreciate your input regarding the use of these substances in your clinical practice. This information will assist FDA in its development of a list of bulk drug substances that outsourcing facilities can use in compounding under section 503B of the Act. All responses are anonymous.

OMB Control No. 0910-0871
Expiration date: June 30, 2022

The time required to complete this information collection is estimated to average 30 minutes, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have additional questions or concerns about this research study, please email: compounding@rx.umaryland.edu. If you have questions about your rights as a research subject, please contact HRPO at 410-760-5037 or hrpo@umaryland.edu.

Q1. Which of the following substances do you use in your practice? Please check all that apply.

- [ ] Amphotericin B
- [ ] Boric acid
- [ ] Cantharidin
- [ ] Ciclopirox olamine
- [ ] Clioquinol
- [ ] Deoxy-d-glucose
- [ ] Diiodohydroxyquinoline
- [ ] Diphenylcyclopropenone (DPCP)
- [ ] Podophyllum
- [ ] Podophyllum resin
- [ ] Quinacrine
- [x] Squaric acid dibutyl ester (SADBE)
- [ ] None of the above

Q2. What type(s) of product(s) do you use, prescribe, or recommend for **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q3. Please list any conditions or diseases for which you use compounded **amphotericin B** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q4.

Do you use compounded **amphotericin B** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q5. Please list all combination products in which you use compounded **amphotericin B**.

This question was not displayed to the respondent.

Q6. For which, if any, diseases or conditions do you consider compounded **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q7. Does your specialty describe the use of compounded **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q8. Over the past 5 years, has the frequency in which you have used compounded **amphotericin B** changed?

This question was not displayed to the respondent.

Q9. Why do you use compounded **amphotericin B** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q10. Do you stock non-patient-specific compounded **amphotericin B** in your practice location?

This question was not displayed to the respondent.

Q11. In what practice location(s) do you stock non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q12. How do you obtain your stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q13. Why do you keep a stock of non-patient-specific compounded **amphotericin B**? Please check all that apply.

This question was not displayed to the respondent.

Q14. For which, if any, diseases or conditions do you consider **amphotericin B** standard therapy?

This question was not displayed to the respondent.

Q15. Does your specialty describe the use of **amphotericin B** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q388. What type(s) of product(s) do you use, prescribe, or recommend for **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q389. Please list any conditions or diseases for which you use compounded **boric acid** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q390.
Do you use compounded **boric acid** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q391. Please list all combination products in which you use compounded **boric acid**.

This question was not displayed to the respondent.

Q392. For which, if any, diseases or conditions do you consider compounded **boric acid** standard therapy?

This question was not displayed to the respondent.

Q393. Does your specialty describe the use of compounded **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q394. Over the past 5 years, has the frequency in which you have used compounded **boric acid** changed?

This question was not displayed to the respondent.

Q395. Why do you use compounded **boric acid** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q396. Do you stock non-patient-specific compounded **boric acid** in your practice location?

This question was not displayed to the respondent.

Q397. In what practice location(s) do you stock non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q398. How do you obtain your stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q399. Why do you keep a stock of non-patient-specific compounded **boric acid**? Please check all that apply.

This question was not displayed to the respondent.

Q400. For which, if any, diseases or conditions do you consider **boric acid** standard therapy?

This question was not displayed to the respondent.

Q401. Does your specialty describe the use of **boric acid** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q402. What type(s) of product(s) do you use, prescribe, or recommend for **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q403. Please list any conditions or diseases for which you use compounded **cantharidin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q404.
Do you use compounded **cantharidin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q405. In which combination(s) do you use compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q406. For which, if any, diseases or conditions do you consider compounded **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q407. Does your specialty describe the use of compounded **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q408. Over the past 5 years, has the frequency in which you have used compounded **cantharidin** changed?

This question was not displayed to the respondent.

Q409. Why do you use compounded **cantharidin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q410. Do you stock non-patient-specific compounded **cantharidin** in your practice location?

This question was not displayed to the respondent.

Q411. In what practice location(s) do you stock non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q412. How do you obtain your stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q413. Why do you keep a stock of non-patient-specific compounded **cantharidin**? Please check all that apply.

This question was not displayed to the respondent.

Q414. For which, if any, diseases or conditions do you consider **cantharidin** standard therapy?

This question was not displayed to the respondent.

Q415. Does your specialty describe the use of **cantharidin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q416. What type(s) of product(s) do you use, prescribe, or recommend for **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q417. Please list any conditions or diseases for which you use compounded **ciclopirox olamine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q418.
Do you use compounded **ciclopirox olamine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q419. In which combination(s) do you use compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q420. For which, if any, diseases or conditions do you consider compounded **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q421. Does your specialty describe the use of compounded **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q422. Over the past 5 years, has the frequency in which you have used compounded **ciclopirox olamine** changed?

This question was not displayed to the respondent.

Q423. Why do you use compounded **ciclopirox olamine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q424. Do you stock non-patient-specific compounded **ciclopirox olamine** in your practice location?

This question was not displayed to the respondent.

Q425. In what practice location(s) do you stock non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q426. How do you obtain your stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q427. Why do you keep a stock of non-patient-specific compounded **ciclopirox olamine**? Please check all that apply.

This question was not displayed to the respondent.

Q428. For which, if any, diseases or conditions do you consider **ciclopirox olamine** standard therapy?

This question was not displayed to the respondent.

Q429. Does your specialty describe the use of **ciclopirox olamine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q430. What type(s) of product(s) do you use, prescribe, or recommend for **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q431. Please list any conditions or diseases for which you use compounded **clioquinol** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q432.
Do you use compounded **clioquinol** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q433. In which combination(s) do you use compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q434. For which, if any, diseases or conditions do you consider compounded **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q435. Does your specialty describe the use of compounded **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q436. Over the past 5 years, has the frequency in which you have used compounded **clioquinol** changed?

This question was not displayed to the respondent.

Q437. Why do you use compounded **clioquinol** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q438. Do you stock non-patient-specific compounded **clioquinol** in your practice location?

This question was not displayed to the respondent.

Q439. In what practice location(s) do you stock non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q440. How do you obtain your stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q441. Why do you keep a stock of non-patient-specific compounded **clioquinol**? Please check all that apply.

This question was not displayed to the respondent.

Q442. For which, if any, diseases or conditions do you consider **clioquinol** standard therapy?

This question was not displayed to the respondent.

Q443. Does your specialty describe the use of **clioquinol** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q444. What type(s) of product(s) do you use, prescribe, or recommend for **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q445. Please list any conditions or diseases for which you use compounded **deoxy-d-glucose** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q446.
Do you use compounded **deoxy-d-glucose** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q447. In which combination(s) do you use compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q448. For which, if any, diseases or conditions do you consider compounded **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q449. Does your specialty describe the use of compounded **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q450. Over the past 5 years, has the frequency in which you have used compounded **deoxy-d-glucose** changed?

This question was not displayed to the respondent.

Q451. Why do you use compounded **deoxy-d-glucose** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q452. Do you stock non-patient-specific compounded **deoxy-d-glucose** in your practice location?

This question was not displayed to the respondent.

Q453. In what practice location(s) do you stock non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q454. How do you obtain your stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q455. Why do you keep a stock of non-patient-specific compounded **deoxy-d-glucose**? Please check all that apply.

This question was not displayed to the respondent.

Q456. For which, if any, diseases or conditions do you consider **deoxy-d-glucose** standard therapy?

This question was not displayed to the respondent.

Q457. Does your specialty describe the use of **deoxy-d-glucose** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q458. What type(s) of product(s) do you use, prescribe, or recommend for **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q459. Please list any conditions or diseases for which you use compounded **diiodohydroxyquinoline** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q460.
Do you use compounded **diiodohydroxyquinoline** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q461. In which combination(s) do you use compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q462. For which, if any, diseases or conditions do you consider compounded **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q463. Does your specialty describe the use of compounded **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q464. Over the past 5 years, has the frequency in which you have used compounded **diiodohydroxyquinoline** changed?

This question was not displayed to the respondent.

Q465. Why do you use compounded **diiodohydroxyquinoline** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q466. Do you stock non-patient-specific compounded **diiodohydroxyquinoline** in your practice location?

This question was not displayed to the respondent.

Q467. In what practice location(s) do you stock non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q468. How do you obtain your stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q469. Why do you keep a stock of non-patient-specific compounded **diiodohydroxyquinoline**? Please check all that apply.

This question was not displayed to the respondent.

Q470. For which, if any, diseases or conditions do you consider **diiodohydroxyquinoline** standard therapy?

This question was not displayed to the respondent.

Q471. Does your specialty describe the use of **diiodohydroxyquinoline** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q472. What type(s) of product(s) do you use, prescribe, or recommend for **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q473. Please list any conditions or diseases for which you use compounded **diphenylcyclopropenone (DPCP)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q474.
Do you use compounded **diphenylcyclopropenone (DPCP)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q475. Please list all combination products in which you use compounded **diphenylcyclopropenone (DPCP)**.

This question was not displayed to the respondent.

Q476. For which, if any, diseases or conditions do you consider compounded **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q477. Does your specialty describe the use of compounded **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q478. Over the past 5 years, has the frequency in which you have used compounded **diphenylcyclopropenone (DPCP)** changed?

This question was not displayed to the respondent.

Q479. Why do you use compounded **diphenylcyclopropenone (DPCP)** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q480. Do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)** in your practice location?

This question was not displayed to the respondent.

Q481. In what practice location(s) do you stock non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q482. How do you obtain your stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q483. Why do you keep a stock of non-patient-specific compounded **diphenylcyclopropenone (DPCP)**? Please check all that apply.

This question was not displayed to the respondent.

Q484. For which, if any, diseases or conditions do you consider **diphenylcyclopropenone (DPCP)** standard therapy?

This question was not displayed to the respondent.

Q485. Does your specialty describe the use of **diphenylcyclopropenone (DPCP)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q486. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q487. Please list any conditions or diseases for which you use compounded **podophyllum** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q488.
Do you use compounded **podophyllum** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q489. In which combination(s) do you use compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q490. For which, if any, diseases or conditions do you consider compounded **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q491. Does your specialty describe the use of compounded **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q492. Over the past 5 years, has the frequency in which you have used compounded **podophyllum** changed?

This question was not displayed to the respondent.

Q493. Why do you use compounded **podophyllum** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q494. Do you stock non-patient-specific compounded **podophyllum** in your practice location?

This question was not displayed to the respondent.

Q495. In what practice location(s) do you stock non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q496. How do you obtain your stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q497. Why do you keep a stock of non-patient-specific compounded **podophyllum**? Please check all that apply.

This question was not displayed to the respondent.

Q498. For which, if any, diseases or conditions do you consider **podophyllum** standard therapy?

This question was not displayed to the respondent.

Q499. Does your specialty describe the use of **podophyllum** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q500. What type(s) of product(s) do you use, prescribe, or recommend for **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q501. Please list any conditions or diseases for which you use compounded **podophyllum resin** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q502.
Do you use compounded **podophyllum resin** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q503. In which combination(s) do you use compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q504. For which, if any, diseases or conditions do you consider compounded **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q505. Does your specialty describe the use of compounded **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q506. Over the past 5 years, has the frequency in which you have used compounded **podophyllum resin** changed?

This question was not displayed to the respondent.

Q507. Why do you use compounded **podophyllum resin** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q508. Do you stock non-patient-specific compounded **podophyllum resin** in your practice location?

This question was not displayed to the respondent.

Q509. In what practice location(s) do you stock non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q510. How do you obtain your stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q511. Why do you keep a stock of non-patient-specific compounded **podophyllum resin**? Please check all that apply.

This question was not displayed to the respondent.

Q512. For which, if any, diseases or conditions do you consider **podophyllum resin** standard therapy?

This question was not displayed to the respondent.

Q513. Does your specialty describe the use of **podophyllum resin** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q529. What type(s) of product(s) do you use, prescribe, or recommend for **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q530. Please list any conditions or diseases for which you use compounded **quinacrine** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

This question was not displayed to the respondent.

Q531.
Do you use compounded **quinacrine** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

This question was not displayed to the respondent.

Q532. Please list all combination products in which you use compounded **quinacrine**.

This question was not displayed to the respondent.

Q533. For which, if any, diseases or conditions do you consider compounded **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q534. Does your specialty describe the use of compounded **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q535. Over the past 5 years, has the frequency in which you have used compounded **quinacrine** changed?

This question was not displayed to the respondent.

Q536. Why do you use compounded **quinacrine** instead of any FDA-approved drug product?

This question was not displayed to the respondent.

Q537. Do you stock non-patient-specific compounded **quinacrine** in your practice location?

This question was not displayed to the respondent.

Q538. In what practice location(s) do you stock non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q539. How do you obtain your stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q540. Why do you keep a stock of non-patient-specific compounded **quinacrine**? Please check all that apply.

This question was not displayed to the respondent.

Q541. For which, if any, diseases or conditions do you consider **quinacrine** standard therapy?

This question was not displayed to the respondent.

Q542. Does your specialty describe the use of **quinacrine** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q543. What type(s) of product(s) do you use, prescribe, or recommend for **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

- [x] Compounded drug product
- [ ] FDA-approved drug product
- [ ] Over the counter drug product
- [ ] Dietary supplement (e.g. vitamin or herbal supplement products sold in retail setting)
- [ ] Unsure

Q544. Please list any conditions or diseases for which you use compounded **squaric acid dibutyl ester (SADBE)** in your practice. Please include the strength(s), dosing frequency(ies), dosage form(s), route(s) of administration, duration of therapy, and patient population (ex. age, gender, comorbidities, allergies, etc).

	Strength(s) (please include units)	Dosing frequency(ies)	Dosage form(s)	Route(s) of administration	Duration of therapy	Patient population
Condition 1 (please describe): Alopecia areata	1%	daily	solution	topical	as long as beneficial	adult/ male and female
Condition 2 (please describe)						

Condition 3 (please describe)

Condition 4 (please describe)

Condition 5 (please describe)

Condition 6 (please describe)

Condition 7 (please describe)

Condition 8 (please describe)

Q545.
Do you use compounded **squaric acid dibutyl ester (SADBE)** as a single agent active ingredient, or as one active ingredient in a combination product? Please check all that apply.

- [x] Single
- [ ] Combination

Q546. Please list all combination products in which you use compounded **squaric acid dibutyl ester (SADBE)**.

This question was not displayed to the respondent.

Q547. For which, if any, diseases or conditions do you consider compounded **squaric acid dibutyl ester (SADBE)** standard therapy?

Alopecia areata

Q548. Does your specialty describe the use of compounded **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

Yes

Q549. Over the past 5 years, has the frequency in which you have used compounded **squaric acid dibutyl ester (SADBE)** changed?

- (●) Yes - I use it **MORE** often now (briefly describe why) lack of other effective treatment for severe alopecia aerate
- ( ) Yes - I use it **LESS** often now (briefly describe why)
- ( ) No - use has remained consistent

Q550. Why do you use compounded **squaric acid dibutyl ester (SADBE)** instead of any FDA-approved drug product?

No approve FDA product available

Q551. Do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)** in your practice location?

- ( ) Yes
- (●) No

Q552. In what practice location(s) do you stock non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q553. How do you obtain your stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q554. Why do you keep a stock of non-patient-specific compounded **squaric acid dibutyl ester (SADBE)**? Please check all that apply.

This question was not displayed to the respondent.

Q555. For which, if any, diseases or conditions do you consider **squaric acid dibutyl ester (SADBE)** standard therapy?

This question was not displayed to the respondent.

Q556. Does your specialty describe the use of **squaric acid dibutyl ester (SADBE)** in medical practice guidelines or other resources?

This question was not displayed to the respondent.

Q16. What is your terminal clinical degree? Please check all that apply.

- [x] Doctor of Medicine (MD)
- [ ] Doctor of Osteopathic Medicine (DO)
- [ ] Doctor of Medicine in Dentistry (DMD/DDS)
- [ ] Naturopathic Doctor (ND)
- [ ] Nurse Practitioner (NP)
- [ ] Physician Assistant (PA)
- [ ] Other (please describe)

Q17. Which of the following Board certification(s) do you hold? Please check all that apply.

- [ ] No Board certification
- [ ] Allergy and Immunology
- [ ] Anesthesiology
- [ ] Cardiovascular Disease
- [ ] Critical Care Medicine
- [x] Dermatology
- [ ] Emergency Medicine
- [ ] Endocrinology, Diabetes and Metabolism
- [ ] Family Medicine
- [ ] Gastroenterology
- [ ] Hematology
- [ ] Infectious Disease
- [ ] Internal Medicine
- [ ] Medical Toxicology
- [ ] Naturopathic Doctor
- [ ] Naturopathic Physician
- [ ] Nephrology
- [ ] Neurology
- [ ] Obstetrics and Gynecology
- [ ] Oncology
- [ ] Ophthalmology
- [ ] Otolaryngology
- [ ] Pain Medicine
- [ ] Pediatrics
- [ ] Psychiatry
- [ ] Rheumatology
- [ ] Sleep Medicine
- [ ] Surgery (please describe)
- [ ] Urology
- [ ] Other (please describe)