CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER:

022408Orig1s000

PROPRIETARY NAME REVIEW(S)

Department of Health and Human Services

Public Health Service

Food and Drug Administration

Center for Drug Evaluation and Research

Office of Surveillance and Epidemiology

Date:	October 22, 2010
Application Type/Number:	NDA 022408
Through:	Kristina A. Toliver, PharmD, Team Leader Denise P. Toyer, PharmD, Deputy Director Division of Medication Error Prevention and Analysis (DMEPA)
From:	Loretta Holmes, BSN, PharmD, Safety Evaluator Division of Medication Error Prevention and Analysis (DMEPA)
Subject:	Proprietary Name Review
Drug Name:	Natroba (Spinosad) Suspension 0.9%
Applicant:	ParaPRO, LLC
OSE RCM #:	2010-1633

***** This document contains proprietary and confidential information that should not be released to the public.*****

CONTENTS

EXECUTIVE SUMMARY

This review summarizes DMEPA's evaluation of the proposed proprietary name, Natroba, for Spinosad Suspension 0.9%. Our evaluation found the proposed name, Natroba, vulnerable to medication errors due to its potential for confusion (b) (4)

The proposed proprietary name must be re-reviewed 90 days before approval of the NDA. Additionally, if any of the proposed product characteristics as stated in this review are altered, DMEPA rescinds this finding and the name must be resubmitted for review. The conclusions upon re-review are subject to change.

1 BACKGROUND

1.1 INTRODUCTION

This review responds to a July 23, 2010 request from ParaPRO Pharmaceuticals, LLC for an assessment of the proposed proprietary name, Natroba, regarding potential name confusion with other proprietary or established drug names in the usual practice settings.

Additionally, the revised container labels, carton and insert labeling are being evaluated for their potential contribution to medication errors under separate cover (OSE Review 2010-1634).

1.2 REGULATORY HISTORY

(b) (4)

Applicant has submitted the proposed proprietary name, Natroba, for our evaluation.

1.3 PRODUCT INFORMATION

Natroba is the proposed proprietary name for Spinosad Suspension 0.9%. Natroba is a pediculocide indicated for the topical treatment of head lice infestations in patients four years of age and older. Natroba should be applied to dry scalp and hair using only the amount needed to cover the scalp and hair. Natroba should be left on for 10 minutes, then rinsed off with warm water. Natroba will be supplied in 4 oz (120 mL) bottles with a child-resistant cap. Natroba should be stored at 25ºC (77ºF), excursions permitted to 15º to 30ºC(59º to 86ºF).

2 METHODS AND MATERIALS

Appendix A describes the general methods and materials used by the Division of Medication Error Prevention and Analysis (DMEPA) when conducting a proprietary name risk assessment for all proprietary names. Sections 2.1 and 2.2 identify specific information associated with the methodology for the proposed proprietary name, Natroba.

2.1 SEARCH CRITERIA

For this review, particular consideration was given to drug names beginning with the letter 'N' when searching to identify potentially similar drug names, as 75% of the confused drug names reported by the USP-ISMP Medication Error Reporting Program involve pairs beginning with the same letter.[1,2]

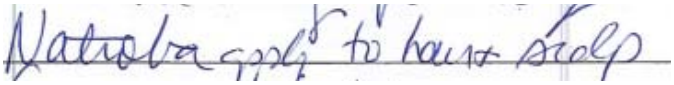
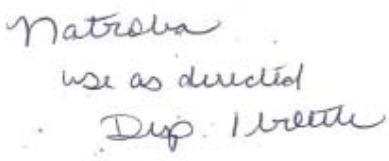
To identify drug names that may look similar to Natroba, the DMEPA Safety Evaluators also consider the orthographic appearance of the name on lined and unlined orders. Specific attributes taken into consideration include the length of the name (seven letters), upstrokes (two, lower case 't' and 'b'), downstrokes (none), cross strokes (one, lower case 't'), and dotted letters (none). Additionally, several letters in Natroba may be vulnerable to ambiguity when scripted (see Appendix B). As a result, the DMEPA Safety Evaluators also considers these alternate appearances when identifying drug names that may look similar to Natroba.

When searching to identify potential names that may sound similar to Natroba, the DMEPA Safety Evaluators search for names with similar number of syllables (three), stresses (NA-tro-ba, na-TRO-ba, or na-tro-BA), and placement of vowel and consonant sounds. Additionally, the DMEPA Safety Evaluators consider that pronunciation of parts of the name can vary (see Appendix B). The Applicant's intended pronunciation of the name is "Nah **TRO** buh". However, names are often mispronounced and/or spoken with regional accents and dialects, so other potential pronunciations of the name are considered.

2.2 FDA PRESCRIPTION ANALYSIS STUDIES

In order to evaluate the potential for misinterpretation of the proposed proprietary name in handwriting and verbal communication of the name, the following inpatient medication order, outpatient and verbal prescription was communicated during the FDA prescription studies.

Figure 1. Natroba Prescription Studies (conducted on August 10, 2010)

HANDWRITTEN REQUISITION MEDICATION ORDER	VERBAL PRESCRIPTION
Inpatient Medication Order: 	"Natroba Apply to hair and scalp"
Outpatient Prescription: 	

[1] Institute for Safe Medication Practices. Confused Drug Name List (1996-2006). Available at http://www.ismp.org/Tools/confuseddrugnames.pdf

[2] Kondrack, G and Dorr, B. Automatic Identification of Confusable Drug Names. Artificial Intelligence in Medicine (2005)

3 RESULTS

3.1 DATABASE AND INFORMATION SOURCES

The DMEPA searches yielded a total of 20 names as having some similarity to the name Natroba.

Fourteen of the 20 names were thought to look like Natroba. These include Natazia, Natacyn, Nascobal, Nabilone, Nabi-HB, Neutroval***, Nitrostat, Nitrol, Nitronal, Nolvadex, Motofen, Namenda, Natrofen, and Nutrotal. One name, Neevo DHA , was thought to sound like Natroba. The remaining five names, Nutropin, (b) (4) Nitro-BID, Nitro-Dur, and Natrecor were thought to look and sound similar to Natroba.

Additionally, DMEPA Safety Evaluators did not identify any United States Adopted Names (USAN) stems in the proposed proprietary name as of October 2, 2010.

3.2 CDER EXPERT PANEL DISCUSSION

The Expert Panel reviewed the pool of names identified by DMEPA Safety Evaluators (see Section 3.1 above) and noted no additional names thought to have orthographic or phonetic similarity to Natroba.

DDMAC had no concerns regarding the proposed name from a promotional perspective and did not offer any additional comments relating to the proposed name.

3.3 FDA PRESCRIPTION ANALYSIS STUDIES

A total of 29 practitioners responded. Thirteen of the practitioners interpreted the name correctly as "Natroba". The remainder of the practitioners misinterpreted the drug name. None of the responses overlapped with any existing or proposed U.S. drug names. See Appendix C for the complete listing of interpretations from the verbal and written prescription studies.

3.4 COMMENTS FROM THE DIVISION OF DERMATOLOGY AND DENTAL PRODUCTS (DDDP)

3.4.1 Initial Phase of Review

The Division of Dermatology Products did not respond to the email sent by OSE on August 20, 2010 inquiring about any concerns the Division may have with the proprosed proprietary name, Natroba.

3.4.2 Midpoint of Review

On October 20, 2010 DMEPA notified the Division of Dermatology and Dental Products (DDDP) via e-mail that we we found the proposed proprietary name, Natroba, conditionally acceptable. Per e-mail correspondence from DDDP on October 21, 2010, the Division stated "All team members have responded, and there are no objections to the proposed proprietary name "Natroba".

3.5 SAFETY EVALUATOR RISK ASSESSMENT

Independent searches by the primary Safety Evaluator resulted in identification of seven additional names which were thought to look similar to Natroba and represent a potential source of drug name confusion. The names identified to have look-alike similarities are Nelova, Nitro-Par, Retrovir, Nutrifac ZX, Vadova***, (b) (4)

Additionally, we note the proposed proprietary name Natroba is nearly identical to (b) (4) the name initially proposed for this product. (b) (4)

This document contains proprietary and confidential information that should not be released to the public.

Therefore, the 39 names identified in our proprietary name review of (b) (4) were re-evaluated for their potential orthographic and/or phonetic similarity to Natroba (see Appendix D). Those names that overlap with the names identified in the current EPD panel searches and independent searches by the primary Safety Evaluator were omitted from this list.

Thus, we evaluated a total of 66 names: 20 identified in Database and Information Sources (Section 3.1) and 46 identified in this section by the primary Safety Evaluator.

4 DISCUSSION

The proposed name, Natroba, was evaluated from a safety and promotional perspective based on the product characteristics provided by the Applicant. We sought input from pertinent disciplines involved with the review of this application and considered it accordingly.

4.1 PROMOTIONAL ASSESSMENT

DDMAC evaluated the name Natroba from a promotional perspective and determined the name was acceptable. The Division of Dermatology and Dental Products and the Division of Medication Error Prevention and Analysis concurred with this assessment.

4.2 SAFETY ASSESSMENT

In total, 66 names were identified as potential sources of name confusion with the proposed proprietary name, Natroba. DMEPA did not identify other aspects of the name that could function as a source of error. Thirty-three of the 66 names were not evaluated further for the following reasons: 16 names lack orthographic and/or phonetic similarity, nine are foreign drug products, six are names that are not currently marketed in the U.S. and two are non-drug products (see Appendices E through H).

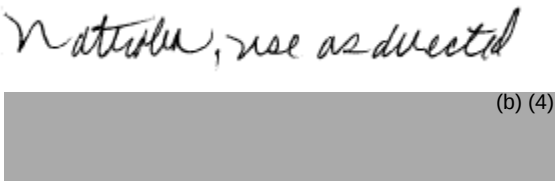
Failure mode and effects analysis (FMEA) was then applied to determine if the proposed name could potentially be confused with the remaining 33 names and lead to medication errors. This analysis determined that the name similarity between Natroba and 32 of the remaining names was unlikely to result in medication errors for the reasons presented in Appendix I.

However, the analysis determined that confusion was likely to result in medication errors between the name Natroba, and the remaining name, (b) (4) (see Section 4.2.1 for a full discussion).

4.2.1 Natroba and (b) (4)

The proposed name, Natroba, is orthographically similar to the proposed proprietary name, (b) (4)

Natroba and (b) (4) are orthographically similar (b) (4)



In addition to the orthograhic similarities between the names Natroba and (b) (4) both products share overlapping product characteristics such as availability in a single strength and the potential for similar directions for use. Because these products are available in a single strength, it is not necessary to put the strength on a prescription for either product. Additionally, both products could be prescribed with directions that state "use as directed". Therefore, prescriptions for "Natroba, use as directed" may be misinterpreted as (b) (4) use as directed" and vice versa (see above).

Thus, the orthographic similarities between Natroba and (b) (4) combined with their overlapping product characteristic similarities increase the potential for wrong drug medication errors to occur between this name pair.

5 CONCLUSIONS AND RECOMMENDATIONS

The Proprietary Name Risk Assessment findings indicate that the proposed name, Natroba, is not promotional but is vulnerable to name confusion that could lead to medication errors (b) (4) Therefore, at this time, the acceptability of the proposed proprietary name, Natroba, is dependent upon which application is approved first.

If any of the proposed product characteristics as stated in this review are altered prior to approval of this NDA, DMEPA rescinds this Risk Assessment finding and the name must be resubmitted for review. In the event that our Risk Assessment finding is rescinded, the evaluation of the name on resubmission is independent of the previous Risk Assessment, and as such, the conclusions on re-review of the name are subject to change. If the approval of this application is delayed beyond 90 days from the signature date of this review, the proposed name must be re-evaluated.

If you have further questions or need clarifications, please contact Janet Anderson, OSE Project Manager, at 301-796-0675.

5.1 COMMENTS TO THE APPLICANT

We have completed our review of the proposed proprietary name, Natroba, and have concluded that it is vulnerable to name confusion that could lead to medication errors with a proposed proprietary name for a pending application. Natroba and the pending proprietary name are orthographically similar and share overlapping product characteristics. Therefore, at this time, the acceptability of the proposed proprietary name, Natroba, is dependent upon which application is approved first. If the Agency approves the Natroba NDA first, we will recommend the other applicant seek an alternate name. If the other application is approved prior to your application, then you will be requested to submit another name.

If you wish to continue to pursue the proposed name Natroba at this time, we will re-review your name 90 days prior to the approval of the NDA. If **any** of the proposed product characteristics as stated in your July 23, 2010 submission are altered prior to approval of the marketing application, the proprietary name should be resubmitted for review.

6 REFERENCES

1. Micromedex Integrated Index (http://csi.micromedex.com)

Contains a variety of databases covering pharmacology, therapeutics, toxicology and diagnostics.

2. Phonetic and Orthographic Computer Analysis (POCA)

As part of the name similarity assessment, proposed names are evaluated via a phonetic/orthographic algorithm. The proposed proprietary name is converted into its phonemic representation before it runs through the phonetic algorithm. Likewise, an orthographic algorithm exists which operates in a similar fashion. This is a database which was created for the Division of Medication Error Prevention and Analysis, FDA.

3. Drug Facts and Comparisons, online version, St. Louis, MO (http://factsandcomparisons.com)

Drug Facts and Comparisons is a compendium organized by therapeutic course; contains monographs on prescription and OTC drugs, with charts comparing similar products.

4. FDA Document Archiving, Reporting & Regulatory Tracking System [DARRTS]

DARRTS is a government database used to organize Applicant and Sponsor submissions as well as to store and organize assignments, reviews, and communications from the review divisions.

5. Division of Medication Errors Prevention and Analysis proprietary name consultation requests

This is a list of proposed and pending names that is generated by the Division of Medication Error Prevention and Analysis from the Access database/tracking system.

6. Drugs@FDA (http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm)

Drugs@FDA contains most of the drug products approved since 1939. The majority of labels, approval letters, reviews, and other information are available for drug products approved from 1998 to the present. Drugs@FDA contains official information about FDA approved brand name, generic drugs, therapeutic biological products, prescription and over-the-counter human drugs and discontinued drugs and "Chemical Type 6" approvals.

7. Electronic online version of the FDA Orange Book (http://www.fda.gov/cder/ob/default.htm)

Provides a compilation of approved drug products with therapeutic equivalence evaluations.

8. U.S. Patent and Trademark Office (http://www.uspto.gov)

Provides information regarding patent and trademarks.

9. Clinical Pharmacology Online (www.clinicalpharmacology-ip.com)

Contains full monographs for the most common drugs in clinical use, plus mini monographs covering investigational, less common, combination, nutraceutical and nutritional products. Provides a keyword search engine.

10. Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com)

The Pharma In-Use Search database contains over 400,000 unique pharmaceutical trademarks and trade names that are used in about 50 countries worldwide. The data is provided under license by IMS HEALTH.

11. Natural Medicines Comprehensive Databases (www.naturaldatabase.com)

Contains up-to-date clinical data on the natural medicines, herbal medicines, and dietary supplements used in the western world.

12. Stat!Ref (www.statref.com)

Contains full-text information from approximately 30 texts. Includes tables and references. Among the database titles are: Handbook of Adverse Drug Interactions, Rudolph's Pediatrics, Basic Clinical Pharmacology and Dictionary of Medical Acronyms Abbreviations.

13. USAN Stems (http://www.ama-assn.org/ama/pub/category/4782.html)

List contains all the recognized USAN stems.

14. Red Book Pharmacy's Fundamental Reference

Contains prices and product information for prescription, over-the-counter drugs, medical devices, and accessories.

15. Lexi-Comp (www.lexi.com)

A web-based searchable version of the Drug Information Handbook.

16. Medical Abbreviations Book

Contains commonly used medical abbreviations and their definitions.

APPENDICES

Appendix A:

FDA's Proprietary Name Risk Assessment considers the potential for confusion between the proposed proprietary name and the proprietary and established names of drug products existing in the marketplace and those pending IND, NDA, BLA, and ANDA products currently under review by the Center. DMEPA defines a medication error as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. [3]

For the proposed proprietary name, DMEPA Safety Evaluators search a standard set of databases and information sources to identify names with orthographic and phonetic similarity and hold a Center for Drug Evaluation and Research (CDER) Expert Panel discussion to gather professional opinions on the safety of the proposed proprietary name. DMEPA Safety Evaluators also conduct internal CDER prescription analysis studies. When provided, DMEPA considers external prescription analysis study results and incorporate into the overall risk assessment.

The Safety Evaluator assigned to the Proprietary Name Risk Assessment is responsible for considering the collective findings, and provides an overall risk assessment of the proposed proprietary name. DMEPA bases the overall risk assessment on the findings of a Failure Mode and Effects Analysis (FMEA) of the proprietary name, and focuses on the avoidance of medication errors.

FMEA is a systematic tool for evaluating a process and identifying where and how it might fail. [4] DMEPA uses FMEA to analyze whether the drug names identified with orthographic or phonetic similarity to the

[3] National Coordinating Council for Medication Error Reporting and Prevention. http://www.nccmerp.org/aboutMedErrors.html. Last accessed 10/11/2007.

[4] Institute for Healthcare Improvement (IHI). Failure Modes and Effects Analysis. Boston. IHI:2004.

proposed proprietary name could cause confusion that subsequently leads to medication errors in the clinical setting. DMEPA uses the clinical expertise of its Safety Evaluators to anticipate the conditions of the clinical setting where the product is likely to be used based on the characteristics of the proposed product.

In addition, the product characteristics provide the context for the verbal and written communication of the drug names and can interact with the orthographic and phonetic attributes of the names to increase the risk of confusion when there is overlap or, in some instances, decrease the risk of confusion by helping to differentiate the products through dissimilarity. Accordingly, the DMEPA Safety Evaluators consider the product characteristics associated with the proposed drug throughout the risk assessment because the product characteristics of the proposed may provide a context for communication of the drug name and ultimately determine the use of the product in the *usual* clinical practice setting.

Typical product characteristics considered when identifying drug names that could potentially be confused with the proposed proprietary name include, but are not limited to; established name of the proposed product, proposed indication of use, dosage form, route of administration, strength, unit of measure, dosage units, recommended dose, typical quantity or volume, frequency of administration, product packaging, storage conditions, patient population, and prescriber population. Because drug name confusion can occur at any point in the medication use process, DMEPA Safety Evaluators consider the potential for confusion throughout the entire U.S. medication use process, including drug procurement, prescribing and ordering, dispensing, administration, and monitoring the impact of the medication.[5] DMEPA provides the product characteristics considered for this review in section one.

The Division of Medication Error Prevention and Analysis considers the spelling of the name, pronunciation of the name when spoken, and appearance of the name when scripted. DMEPA also compares the spelling of the proposed proprietary name with the proprietary and established name of existing and proposed drug products because similarly in spelled names may have greater likelihood to sound similar to one another when spoken or look similar to one another when scripted. DMEPA Safety Evaluators also examine the orthographic appearance of the proposed name using a number of different handwriting samples. Handwritten communication of drug names has a long-standing association with drug name confusion. Handwriting can cause similarly and even dissimilarly spelled drug name pairs to appear very similar to one another. The similar appearance of drug names when scripted has led to medication errors. The DMEPA Safety Evaluators apply expertise gained from root-cause analysis of such medication errors to identify sources of ambiguity within the name that could be introduced when scripting (e.g.,"T" may look like "F," lower case 'a' looks like a lower case 'u,' etc). Additionally, other orthographic attributes that determine the overall appearance of the drug name when scripted (see Table 1 below for details). In addition, the DMEPA Safety Evaluators compare the pronunciation of the proposed proprietary name with the pronunciation of other drug names because verbal communication of medication names is common in clinical settings. If provided, DMEPA will consider the Applicant's intended pronunciation of the proprietary name. However, DMEPA also considers a variety of pronunciations that could occur in the English language because the Applicant has little control over how the name will be spoken in clinical practice.

[5] Institute of Medicine. Preventing Medication Errors. The National Academies Press: Washington DC. 2006.

Table 1. Criteria used to identify drug names that look- or sound-similar to a proposed proprietary name.

Type of similarity	**Considerations when searching the databases**		
	Potential causes of drug name similarity	*Attributes examined to identify similar drug names*	*Potential Effects*
Look-alike	Similar spelling	Identical prefix Identical infix Identical suffix Length of the name Overlapping product characteristics	• Names may appear similar in print or electronic media and lead to drug name confusion in printed or electronic communication • Names may look similar when scripted and lead to drug name confusion in written communication
	Orthographic similarity	Similar spelling Length of the name Upstrokes Down strokes Cross-stokes Dotted letters Ambiguity introduced by scripting letters Overlapping product characteristics	• Names may look similar when scripted, and lead to drug name confusion in written communication
Sound-alike	Phonetic similarity	Identical prefix Identical infix Identical suffix Number of syllables Stresses Placement of vowel sounds Placement of consonant sounds Overlapping product characteristics	• Names may sound similar when pronounced and lead to drug name confusion in verbal communication

Lastly, the DMEPA Safety Evaluators also consider the potential for the proposed proprietary name to inadvertently function as a source of error for reasons other than name confusion. Post-marketing experience has demonstrated that proprietary names (or components of the proprietary name) can be a source of error in a variety of ways. Consequently, DMEPA considers and evaluates these broader safety implications of the name throughout this assessment and the medication error staff provides additional comments related to the safety of the proposed proprietary name or product based on professional experience with medication errors.

1. Database and Information Sources

DMEPA Safety Evaluators conduct searches of the internet, several standard published drug product reference texts, and FDA databases to identify existing and proposed drug names that may sound-alike or look-alike to the proposed proprietary name using the criteria outlined in Section 2.1. Section 6 provides a standard description of the databases used in the searches. To complement the process, the DMEPA Safety Evaluators use a computerized method of identifying phonetic and orthographic similarity between medication names. The program, Phonetic and Orthographic Computer Analysis (POCA), uses complex algorithms to select a list of names from a database that have some similarity (phonetic, orthographic, or both) to the trademark being evaluated. Lastly, the DMEPA Safety Evaluators review the USAN stem list to determine if any USAN stems

are present within the proprietary name. The individual findings of multiple safety evaluators are pooled and presented to the CDER Expert Panel.

2. CDER Expert Panel Discussion

DMEPA conducts an Expert Panel Discussion to gather CDER professional opinions on the safety of the proposed product and the proposed proprietary name. The Expert Panel is composed of Division of Medication Errors Prevention (DMEPA) Safety Evaluators and representatives from the Division of Drug Marketing, Advertising, and Communications (DDMAC). The Expert Panel also discusses potential concerns regarding drug marketing and promotion related to the proposed names.

The primary Safety Evaluator presents the pooled results of the DMEPA staff to the Expert Panel for consideration. Based on the clinical and professional experiences of the Expert Panel members, the Panel may recommend the addition of names, additional searches by the primary Safety Evaluator to supplement the pooled results, or general advice to consider when reviewing the proposed proprietary name.

3. FDA Prescription Analysis Studies

Three separate studies are conducted within the Centers of the FDA for the proposed proprietary name to determine the degree of confusion of the proposed proprietary name with marketed U.S. drug names (proprietary and established) due to similarity in visual appearance with handwritten prescriptions or verbal pronunciation of the drug name. The studies employ healthcare professionals (pharmacists, physicians, and nurses), and attempts to simulate the prescription ordering process. The primary Safety Evaluator uses the results to identify orthographic or phonetic vulnerability of the proposed name to be misinterpreted by healthcare practitioners.

In order to evaluate the potential for misinterpretation of the proposed proprietary name in handwriting and verbal communication of the name, inpatient medication orders and outpatient prescriptions are written, each consisting of a combination of marketed and unapproved drug products, including the proposed name. These orders are optically scanned and one prescription is delivered to a random sample of the 123 participating health professionals via e-mail. In addition, a verbal prescription is recorded on voice mail. The voice mail messages are then sent to a random sample of the participating health professionals for their interpretations and review. After receiving either the written or verbal prescription orders, the participants send their interpretations of the orders via e-mail to DMEPA.

4. Comments from the OND review Division or Generic drugs

DMEPA requests the Office of New Drugs (OND) or Office of Generic Drugs (OGD) Regulatory Division responsible for the application for their comments or concerns with the proposed proprietary name and any clinical issues that may impact the DMEPA review during the initial phase of the name review. Additionally, when applicable, at the same time DMEPA requests concurrence/non-concurrence with DDMAC's decision on the name. The primary Safety Evaluator addresses any comments or concerns in the safety evaluator's assessment.

The OND or OGD Regulatory Division is contacted a second time following our analysis of the proposed proprietary name. At this point, DMEPA conveys their decision to accept or reject the name. The OND or OGD Regulatory Division is requested to concur/not concur with DMEPA's final decision.

5. Safety Evaluator Risk Assessment of the Proposed Proprietary Name

The primary Safety Evaluator applies his/her individual expertise gained from evaluating medication errors reported to FDA, conducts a Failure Mode and Effects Analysis, and provides an overall risk assessment of name confusion. Failure Mode and Effects Analysis (FMEA) is a systematic tool for evaluating a process and

identifying where and how it might fail.[6] When applying FMEA to assess the risk of a proposed proprietary name, DMEPA seeks to evaluate the potential for a proposed proprietary name to be confused with another drug name because of name confusion and, thereby, cause errors to occur in the medication use system. FMEA capitalizes on the predictable and preventable nature of medication errors associated with drug name confusion. FMEA allows the Agency to identify the potential for medication errors due to orthographically or phonetically similar drug names prior to approval, where actions to overcome these issues are easier and more effective than remedies available in the post-approval phase.

In order to perform an FMEA of the proposed name, the primary Safety Evaluator must analyze the use of the product at all points in the medication use system. Because the proposed product is has not been marketed, the primary Safety Evaluator anticipates the use of the product in the usual practice settings by considering the clinical and product characteristics listed in Section one. The Safety Evaluator then analyzes the proposed proprietary name in the context of the usual practice setting and works to identify potential failure modes and the effects associated with the failure modes.

In the initial stage of the Risk Assessment, the Safety Evaluator compares the proposed proprietary name to all of the names gathered from the above searches, Expert Panel Discussion, and prescription studies, external studies, and identifies potential failure modes by asking:

> ***"Is the proposed proprietary name convincingly similar to another drug name, which may cause practitioners to become confused at any point in the usual practice setting?"***

An affirmative answer indicates a failure mode and represents a potential for the proposed proprietary name to be confused with another proprietary or established drug name because of look- or sound-alike similarity. If the answer to the question is no, the Safety Evaluator is not convinced that the names posses similarity that would cause confusion at any point in the medication use system, thus the name is eliminated from further review.

In the second stage of the Risk Assessment, the primary Safety Evaluator evaluates all potential failure modes to determine the likely *effect* of the drug name confusion, by asking:

> ***"Could the confusion of the drug names conceivably result in medication errors in the usual practice setting?"***

The answer to this question is a central component of the Safety Evaluator's overall risk assessment of the proprietary name. If the Safety Evaluator determines through FMEA that the name similarity would not ultimately be a source of medication errors in the usual practice setting, the primary Safety Evaluator eliminates the name from further analysis. However, if the Safety Evaluator determines through FMEA that the name similarity could ultimately cause medication errors in the usual practice setting, the Safety Evaluator will then recommend the use of an alternate proprietary name.

DMEPA will object to the use of proposed proprietary name when the primary Safety Evaluator identifies one or more of the following conditions in the Risk Assessment:

a. DDMAC finds the proposed proprietary name misleading from a promotional perspective, and the Review Division concurs with DDMAC's findings. The Federal Food, Drug, and Cosmetic Act provides that labeling or advertising can misbrand a product if misleading representations are made or suggested by statement, word, design, device, or any combination thereof, whether through a PROPRIETARY name or otherwise [21 U.S.C 321(n); See also 21 U.S.C. 352(a) & (n)].

b. DMEPA identifies that the proposed proprietary name is misleading because of similarity in spelling or pronunciation to another proprietary or established name of a different drug or ingredient [CFR 201.10.(C)(5)].

[6] Institute for Healthcare Improvement (IHI). Failure Mode and Effects Analysis. Boston. IHI:2004.

c. FMEA identifies the potential for confusion between the proposed proprietary name and other proprietary or established drug name(s), and demonstrates that medication errors are likely to result from the drug name confusion under the conditions of usual clinical practice.

d. The proposed proprietary name contains an USAN (United States Adopted Names) stem.

e. DMEPA identifies a potential source of medication error within the proposed proprietary name. For example, the proprietary name may be misleading or, inadvertently, introduce ambiguity and confusion that leads to errors. Such errors may not necessarily involve confusion between the proposed drug and another drug product.

If DMEPA objects to a proposed proprietary name on the basis that drug name confusion could lead to medication errors, the primary Safety Evaluator uses the FMEA process to identify strategies to reduce the risk of medication errors. DMEPA is likely to recommend that the Applicant select an alternative proprietary name and submit the alternate name to the Agency for DMEPA to review. However, in rare instances FMEA may identify plausible strategies that could reduce the risk of medication error of the currently proposed name. In that instance, DMEPA may be able to provide the Applicant with recommendations that reduce or eliminate the potential for error and, thereby, would render the proposed name acceptable.

In the event that DMEPA objects to the use of the proposed proprietary name, based upon the potential for confusion with another proposed (but not yet approved) proprietary name, DMEPA will provide a contingency objection based on the date of approval. Whichever product, the Agency approves first has the right to use the proprietary name, while DMEPA will recommend that the second product to reach approval seek an alternative name.

The threshold set for objection to the proposed proprietary name may seem low to the Applicant. However, the safety concerns set forth in criteria a through e are supported either by FDA regulation or by external healthcare authorities, including the Institute of Medicine (IOM), World Health Organization (WHO), Joint Commission on Accreditation of Hospitals (JCOAH), and the Institute for Safe Medication Practices (ISMP). These organizations have examined medication errors resulting from look- or sound-alike drug names and called for regulatory authorities to address the issue prior to approval. Additionally, DMEPA contends that the threshold set for the Proprietary Name Risk Assessment is reasonable because proprietary drug name confusion is a predictable and a preventable source of medication error that, in many instances, the Agency and/or Applicant can identify and rectify prior to approval to avoid patient harm.

Furthermore, post-marketing experience has demonstrated that medication errors resulting from drug name confusion are notoriously difficult to rectify post-approval. Educational and other post-approval efforts are low-leverage strategies that have had limited effectiveness at alleviating medication errors involving drug name confusion. Applicants have undertaken higher-leverage strategies, such as drug name changes, in the past but at great financial cost to the Applicant and at the expense of the public welfare, not to mention the Agency's credibility as the authority responsible for approving the error-prone proprietary name. Moreover, even after Applicants' have changed a product's proprietary name in the post-approval phase, it is difficult to eradicate the original proprietary name from practitioners' vocabulary, and as a result, the Agency has continued to receive reports of drug name confusion long after a name change in some instances. Therefore, DMEPA believes that post-approval efforts at reducing name confusion errors should be reserved for those cases in which the potential for name confusion could not be predicted prior to approval. (See Section 4 for limitations of the process).

Appendix B: Letters with possible orthographic or phonetic misinterpretation

Letters in proposed name "Natroba"	When scripted may appear as:	When spoken may be interpreted as:
Capital "N"	h, L, M, r, U, V, Z	Kn
lower case "a"	ce, ci, d, e, o, u	any vowel
lower case "t"	f, l, x, z	
lower case "r"	c, h, n, s, v	
lower case "o"	a, c, e, u	any vowel
lower case "b"	d, h, lo, r, v	

Appendix C: FDA Prescription Study Responses

Inpatient Medication Order	Outpatient Medication Order	Voice Prescription
Nitroderm	Natroba	Natroba
	Natrolia	Natroba
	Natroba	Nutroba
	Natrolia	Netrova
	Natroba	Nutrova
	(b) (4)	Nutrova
	Natrosba	Nitrova
	Natroba	Neutrova
	Natroba	Nutriva
	Natroba	Nutrova
	Natroba	Notroba
	Natroba	Natroba
	Natroba	Netrova
	(b) (4)	

Appendix D: **Names identified in our proprietary name review of (b) (4) (OSE Review 2009-407)**

Name	Similarity to (b) (4) Natroba
Atrovent	Look
Citroma	Look
Vidaza	Look
Retavase	Look
Nexavar	Look
Frova	Sound
Naldex	Look
Introvale	Look
Natolone	Look
Metvixia	Look
Natrum Phos	Look
Notuss	Look
Natrimax	Look
Naltrexone	Sound
Metrodin	Sound
Inova	Sound
Matrovir	Look
Vatran	Look
(b) (4)	Look
Vitrace	Look
Nutrivit	Look
Novatrex	Sound
Natravox	Look and Sound

Name	Similarity to (b) (4) Natroba
Nitro IV	Look
Trovan	Sound
Natrinil	Look
Nitrovin	Look
Nutren	Look
Naturvue***	Look
Nitora***	Look
Naturvite	Look
Motrin	Look
Nalex-A	Look
Vitrase	Look
Vitaroca	Look
Emtriva	Look
Renova	Look
Novantrone	Look
Victoza***	Look

Appendix E: Names Lacking Orthographic and/or Phonetic Similarity.

Name	Similarity to Natroba
Natazia	Look
Natacyn	Look
Nascobal	Look
Nabilone	Look
Nabi-HB	Look
Nolvadex	Look
Namenda	Look
NalDex	Look
Introvale	Look
Natolone	Look
Natrum Phos	Look
Metvixia	Look
Notuss	Look
Natrimax	Look
Naltrexone	Sound
Inova	Sound

Appendix F: Proprietary or Established Names used only in Foreign Countries

Proprietary Name	Similarity to Natroba	Country
Natrofen	Look	Greece
Nutrotal	Look	Philippines
Matrovir	Look	Indonesia
Vatran	Look	Italy
Atrovan	Look	Korea
Vitrace	Look	South Africa
Nutrivit	Look	Brazil, Mexico, Italy
Novatrex	Sound	France
Natravox	Look and Sound	Phillipines

Appendix G: Names Not Currently Marketed

Proprietary Name	Similarity to Natroba	Status and Date
(b) (4) (Spinosad) Suspension	Look and Sound	(b) (4) is the proprietary name initially proposed for Spinosad, the product currently under review. DMEPA objected to the name and subsequently the name, Natroba, was submitted.
(b) (4)		

Proprietary Name	Similarity to Natroba	Status and Date
Naturvue***	Look	This name was found in DSS. The product was approved in 1976 and the last annual report was submitted in 1978. Unable to find any product information in DSS or our other standard drug information references such as Facts and Comparisons, Clinical Pharmacy, or Micromedex.
Nitora***	Look	This name was found in DSS. The status of the application is listed as "Incomplete" in 1967.
Trovan	Sound	This product was withdrawn by the commissioner in 2006. The year of last recorded sales in the United States was 2003[7]. There are no generic equivalents available.
Natrinil	Look	This name was found in DSS. This product was withdrawn by the commissioner in 1971. Unable to find any product information.

Appendix H: Non-Drug Products

Name	Similarity to Natroba	Comments
Nitrovin	Look	Nitrovin Hydrochloride is a discontinued food additive that was used in veterinarian practice to promote growth.
Nutren	Look	Nutren is a product line of enteral nutrition products. The product line includes such products as Nutren 1.0, Nutren Junior, Nutren Pulmonary, Nutren Glytrol, and others. Prescriptions could be written for these products but would unlikely be presented to a pharmacy for dispensing. Furthermore, if a prescription was written, it would have to state the entire name of the product for clarity.

*** Note: This review contains proprietary and confidential information that should not be released to the public.***

[7]Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com). Acessed on April 10, 2008.

Appendix I: Products with multiple differentiating product characteristics

Product name with potential for confusion	Similarity to Natroba	Strength	Signa	Differentiating Product Characteristics (Natroba vs. Product)
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nitrol (Nitroglycerin) Injection Ointment *This product has been discontinued. The year of last recorded sales for the injection and ointment was 2005 and 2000, respectively.*[8]	Look	Injection: 0.8 mg/mL Ointment: 2%	Injection: Unable to find dosage and administration information specific to this product but similar products are administered as follows: Start with the following doses and titrate. PVC infusion sets: 25 mcg/min intravenous infusion Non-absorbing infusion sets: 5 mcg/min. intravenous infusion Ointment: ½ inch to 2 inches to skin once daily to every four hours	*Dose*: 1 application vs. 25 mcg/min., 5 mcg/min, or ½ inch to 2 inches *Strength*: 0.9% vs. 0.8 mg/mL or 2% *Frequency of administration*: Once, may repeat after 7 days if needed vs. continuous intravenous infusion or once daily to every 4 hours *Dosage form*: Topical suspension vs. Injection or ointment
Motofen (Difenoxin HCl and Atropine Sulfate) Tablets	Look	1 mg/0.025 mg	Two tablets initially, then one tablet after each loose stool (or every 3 to 4 hours) as needed, up to 8 tablets per 24 hours	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. two tablets initially, then one tablet after each loose stool (or every 3 to 4 hours) as needed, up to 8 tablets per 24 hours *Dosage form*: Topical suspension vs. tablet *Strength*: 0.9% vs. 1 mg/0.025 mg

[8]Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com). Accessed on September 15, 2010.

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Neevo DHA Capsules	Look	L-methylfolate 1mg, pyridoxine 25mg, folic acid 400mcg, Vit. B_{12} 1mg, Vit.C 40mg, Vit.E 30 IU, calcium (as tricalcium phosphate) 75mg, iron (ferrous fumarate) 27mg, docosahexaenoic acid (DHA, vegetarian source [algae]) 250mg	1 tablet orally once daily	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. capsules
Nitro-BID (Nitroglycerin) Ointment	Look and Sound	2%	½ inch to 2 inches to skin twice daily	*Frequency of administration*: Once, may repeat after 7 days if needed vs. twice daily *Dosage form*: Topical suspension vs. ointment

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Natrecor (Nesiritide) for Injection	Look and Sound	1.5 mg	Bolus 2 mcg/kg intravenously, then 0.01 mcg/kg/min. via continuous intravenous infusion	*Dose*: 1 application vs. 2 mcg/kg then 0.01 mcg/kg/min. *Route of administration*: Topical vs. intravenous *Frequency of administration*: Once, may repeat after 7 days if needed vs. bolus then continuous intravenous infusion *Dosage form*: Topical suspension vs. for Injection

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nutrifac ZX Multivitamins with minerals Tablets *This product has been discontinued. The year of last sales was 2008.*[9]	Look	Ascorbic Acid (Vitamin C) 500mg, Biotin 200mcg, Calcium 66mg, Chromium 200mcg, Copper 2.5mg, Cyanocobalamin (Vitamin B12) 50mcg, D-Alpha Tocopheryl Succinate (Vitamin E) 50IU, Folic Acid (Vitamin B9) 1mg, Magnesium 50mg, Manganese 5mg, Niacin (Vitamin B3) 100mg, Pantothenic Acid (Vitamin B5) 25mg, Pyridoxine (Vitamin B6) 25mg, Riboflavin (Vitamin B2) 20mg, Selenium 50mcg, Thiamine (Vitamin B1) 20mg, Vitamin A Acetate 5,000IU, Vitamin D 400IU, Zinc 20mg	1 tablet orally once daily	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. tablets

[9]Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com). Accessed on September 15, 2010.

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nitronal (Nitroglycerin) Injection *This NDA was withdrawn in 2000.*	Look	1 mg/mL	Unable to find product specific information on this product, however, other nitroglycerin injection products are typically dosed as follows: Initially, 5 mcg/minute intravenous infusion. The effective dosage range is 5 mcg to 100 mcg/minute IV. Higher doses of 200 mcg/min have been used.	*Route of administration*: Topical vs. intravenous *Dosage form*: Topical suspension vs. injection *Frequency of administration*: Once, may repeat in 7 days if necessary vs. four times per day
Nitro IV (Nitroglycerin) Injection *This product was withdrawn by the commissioner in 2000.*	Look	5 mg/mL	Initially, 5 mcg/minute intravenous infusion. The effective dosage range is 5 mcg to 100 mcg/minute IV. Higher doses of 200 mcg/min have been used.	*Route of administration*: Topical vs. intravenous *Dosage form*: Topical suspension vs. injection *Frequency of administration*: Once, may repeat in 7 days if necessary vs. continuous intravenous infusion
Atrovent HFA (Ipratropium Bromide) Aerosol Solution	Look	17 mcg/actuation	2 inhalations	*Route of administration*: Topical vs. oral inhalation *Dosage form*: Topical suspension vs. aerosol solution *Frequency of administration*: Once, may repeat in 7 days if necessary vs. four times per day
Citroma (Magnesium Citrate) Oral Solution OTC Product	Look	1.745 g/fl. oz.	2 ounces to 10 ounces	*Route of administration*: Topical vs. oral *Dosage form*: Topical suspension vs. oral solution *Frequency of administration*: Once, may repeat in 7 days if necessary vs. a single or divided dose

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Vidaza (Azacitidine) Lyophilized Powder for Suspension	Look	100 mg per vial	75 mg/m^2 to 100 mg/m^2 daily for 7 days, then repeat the cycle every 4 weeks.	*Dose:* One application or the amount needed to cover scalp and hair vs. 130 mg to 173 mg (for a patient with a BSA of 1.73 m^2) *Route of administration*: Topical vs. subcutaneous or intravenous *Dosage form*: Topical suspension vs. lyophilized powder for suspension *Frequency of administration*: Once, may repeat in 7 days if necessary vs. once daily for 7 days, then repeat cycle every 4 weeks
Retavase (Reteplase, Recombinant) Lyophilized Powder	Look	10.4 units (18.1 mg) per vial	10 units by intravenous bolus injection followed by another 10 units bolus 30 minutes later	*Dose:* One application or the amount needed to cover scalp and hair vs. 10 mg *Route of administration*: Topical vs. intravenous *Dosage form*: Topical suspension vs. lyophilized powder *Frequency of administration*: Once, may repeat in 7 days if necessary vs. once, then repeat in 30 minutes
Nexavar (Sorafenib) Tablets	Look	200 mg	400 mg orally, twice daily, once daily, or every other day	*Route of administration*: Topical vs. oral *Dosage form*: Topical suspension vs. tablet *Frequency of administration*: Once, may repeat in 7 days if necessary vs. once daily, twice daily, or every other day

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Frova (Frovatriptan) Tablets	Sound	2.5 mg	2.5 mg orally, may repeat dose after 2 hours if necessary.	*Route of administration*: Topical vs. oral *Dosage form*: Topical suspension vs. tablet *Frequency of administration*: Once, may repeat in 7 days if necessary vs. once, may repeat dose in 2 hours if necessary
Novantrone (Mitoxantrone Hydrochloride) Injection	Look	20 mg/10 mL (2 mg/mL)	12 mg to 14 mg/m^2 intravenously; frequency varies depending on the indication of use and the chemotherapy regimen being used.	Novantrone is longer in length as compared to Natroba (10 letters vs. 7 letters). Natroba has two upstroke letters (“t” and “b”) versus one upstroke letter (“t”) in Novantrone which may help to differentiate the names. *Dose:* 1 application vs. 12 mg to 14 mg/m^2 *Route of administration*: Topical vs. intravenous *Dosage form*: Topical suspension vs. injection

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Naturvite (multivitamins with minerals) Tablets OTC Product *This product has been discontinued*	Look	Each tablet contains: Vitamin B12 (cobalamin) 250 mcg • Vitamin A (palmitate) 10,000 IU • Vitamin D (cholecalciferol) 400 IU • Vitamin B1 (thiamine mononitrate) 25 mg • Vitamin B2 (riboflavin) 25 mg • Vitamin B6 (pyridoxine HCl) 25 mg • Vitamin C (ascorbic acid) 150 mg • Niacinamide 100 mg • Calcium Pantothenate 50 mg • Vitamin E (d-alpha tocopheryl succinate) 25 IU • Biotin 20 mcg • Folic Acid 100 mcg • Iron (gluconate) 6 mg • Iodine (kelp) 100 mcg • Zinc (gluconate) 180 mcg • Calcium (bone meal) 13.5 mg • Magnesium (gluconate) 388 mcg • Copper (gluconate) 35 mcg • Potassium 1.6 mg • Manganese (gluconate) 670 mcg • Choline (bitartrate) 62 mg • Inositol 150 mg • Rutin 25 mg • PABA (para aminobenzoic acid) 25 mg • Citrus Bioflavonoid complex 25 mg • Betaine HCl 25 mg • Hesperidin 5 mg • Desiccated Liver 50 mg • L-Lysine HCl 10 mg. Other Ingredients: Vegetable Cellulose, Silica, Vegetable Stearic Acid, Alfalfa, Acerola, Kelp, Parsley, Rose Hips, Watercress.	1 tablet orally daily	Naturvite is longer in length as compared to Natroba (9 letters vs. 7 letters). Naturvite has 4 letters between the upstroke letters “t” and “t” whereas Natroba has two letters between the upstroke letters “t” and “b” in Natroba which may help to differentiate the names. *Route of administration*: Topical vs. oral *Dosage form*: Topical suspension vs. tablet *Frequency of administration*: Once, may repeat in 7 days if necessary vs. once daily

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Retrovir (Zidovudine) Injection Tablets Capsules Syrup	Look	Injection: 200 mg/20 mL (10 mg/mL) Tablets: 300 mg Capsules: 100 mg Syrup: 50 mg/5 mL	Injection: Maternal: 2 mg/kg over 1 hour followed by a continuous intravenous infusion of 1 mg/kg/hour until clamping of the umbilical cord Infant: 1.5 mg/kg infused over 30 minutes every 6 hours Oral: 100 mg 5 times per day; 600 mg per day in divided doses; neonates: 2 mg/kg every 6 hours	Natroba has two upstroke letters ("t" and "b") vs. Retrovir which has one upstroke letter ("t"). *Dose*: One application or the amount needed to cover scalp and hair vs. 100 mg, 300 mg, or dose based on body weight *Route of administration*: Topical vs. oral or intravenous *Frequency of administration*: Once, may repeat after 7 days if needed vs. twice daily, five times per day, or every 6 hours *Dosage form*: Topical suspension vs. injection, tablets, capsules, and syrup
Nitro-Par (Nitroglycerin) Extended-release Capsules *This product has been discontinued. The year of last sales was 2002)*	Look	2.5 mg, 6.5 mg, 9 mg	Unable to find product specific dosing information, however, similar products are dosed as follows: 2.5 mg to 26 mg orally twice daily, three times per day, or four times per day	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. twice daily, three times per day, or four times per day *Dosage form*: Topical suspension vs. extended-release capsules
Nitro-Dur (Nitroglycerin) Transdermal Patch	Look and Sound	0.1 mg/hr 0.2 mg/hr 0.3 mg/hr 0.4 mg/hr 0.6 mg/hr 0.8 mg/hr	0.1 mg/hr to 0.8 mg/hr patch applied to skin once daily	*Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. transdermal patch

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nutropin (Somatropin) for Injection	Look and Sound	5 mg and 10 mg	0.006 mg/kg/day to 0.025 mg/kg/day subcutaneously; 0.15 mg to 0.3 mg per day subcutaneously	*Dose*: One application or the amount needed to cover scalp and hair vs. 0.15 mg to 0.3 mg or weight based dosing *Route of administration*: Topical vs. subcutaneous *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. for Injection
Metrodin (Urofollitropin) for Injection *This product has been discontinued. The year of last recorded sales was 1999.*[10]	Look and Sound	75 International Units 150 International Units	150 International Units to 450 International Units intramuscularly once daily for five to 12 days	*Dose*: One application or the amount needed to cover scalp and hair vs. 150 to 450 International Units *Route of administration*: Topical vs. intramuscular *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily for five to 12 days *Dosage form*: Topical suspension vs. for Injection

[10]Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com). Accessed on October 5, 2010.

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nalex-A (Phenylephrine Hydrochloride, Chlorpheniramine Maleate, and Phenyltoloxamine Citrate) Tablets Oral Liquid	Look	Tablets: 20 mg/4 mg/40 mg Oral Liquid: 5 mg/2.5 mg/7.5 mg	Tablet: ½ to 1 tablet orally twice daily or three times per day Oral Liquid: 1.25 mL to 10 mL orally every 4 to 6 hours	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. twice daily, three times per daily, or every 4 to 6 hours *Dosage form*: Topical suspension vs. tablets and oral liquid
Vitaroca Plus (Multivitamin with minerals) Tablets	Look	Zinc - 22.5 MG Ascorbic Acid - 500 MG Biotin - 0.15 MG Calcium Pantothenate - 25 MG Chromium - 0.1 MG Copper - 3 MG Cyanocobalamin - 0.05 MG Folic Acid - 0.8 MG Iron - 27 MG Magnesium - 50 MG Manganese - 5 MG Niacin - 100 MG Pyridoxine - 25 MG Riboflavin - 20 MG Thiamine - 20 MG Vitamin A - 5000 IU Vitamin E - 30 IU	Unable to locate dosing information specific to this product, however, multivitamin with mineral tablets are typically administered once daily.	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. tablets

Product name with potential for confusion	Similarity to Natroba	Strength	Signa	Differentiating Product Characteristics (Natroba vs. Product)
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Emtriva (Emtricitabine) Capsules Oral Solution	Look	Tablets: 200 mg Oral Solution: 10 mg/mL	200 mg (tablet) or 240 mg (oral solution) once daily	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. capsules and oral solution
Neutroval*** (Filgrastim) Injection	Look	300 mcg/0.5 mL 480 mcg/0.8 mL	5 mg/kg/day subcutaneously once daily	*Dose*: One application or the amount needed to cover scalp and hair vs. 5 mg/kg/day *Strength:* 0.9% vs. 300 mcg/0.5 mL 480 mcg/0.8 mL *Route of administration*: Topical vs. subcutaneous *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. Injection
Nitrostat (Nitroglycerin) Sublingual Tablets	Look	0.3 mg, 0.4 mg, and 0.6 mg	1 tablet every 5 minutes for three doses as needed for chest pain	*Strength:* 0.9% vs. 0.3 mg, 0.4 mg, and 0.6 mg *Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. 1 tablet every 5 minutes for three doses as needed for chest pain *Dosage form*: Topical suspension vs. tablet

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Vadova*** (Carbidopa and Levodopa) Extended-release Tablets *This NDA was withdrawn in 2008*	Look	25 mg/100 mg 37.5 mg/150 mg 50 mg/200 mg 62.5 mg/250 mg 75 mg/300 mg	1 tablet orally; up to 200 mg/day of Carbidopa, given in divided doses	*Strength:* 0.9% vs. 25 mg/100 mg 37.5 mg/150 mg, 50 mg/200 mg, 62.5 mg/250 mg, and 75 mg/300 mg *Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. multiple doses per day *Dosage form*: Topical suspension vs. tablet
Motrin Product Line (Multiple products e.g., Motrin Infant's, Children's Motrin, Junior Strength Motrin, Motrin IB, Motrin Migraine Pain, and others) OTC Products	Look	Tablets: 100 mg and 200 mg Chewable tablets: 50 mg and 100 mg Oral Suspension: 100 mg/5 mL Oral drops: 40 mg/mL	Dosage range (age based): 50 mg to 300 mg orally every 4 hours or every 6 to 8 hours.	*Strength:* 0.9% vs. 50 mg, 100 mg, 200 mg, 40 mg/mL and 100 mg/5 mL *Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. every 6 to 8 hours *Dosage form*: Topical suspension vs. tablet, drops, and suspension
Vitrase (Hyaluronidase) Lyophilized Powder Injection	Look	Lyophilized Powder: 6,200 units Injection: 400 units/2 mL (200 units/mL)	50 units to 300 units added to the injection solution for subcutaneous administration	*Dose*: One application or the amount needed to cover scalp and hair vs. 50 units to 300 units *Strength:* 0.9% vs. 6,200 units and 400 units/2 mL *Route of administration*: Topical vs. subcutaneous *Dosage form*: Topical suspension vs. for Injection and Injection

Product name with potential for confusion	Similarity to Natroba	Strength	Signa	Differentiating Product Characteristics (Natroba vs. Product)
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Renova (Tretinoin) Cream	Look	0.02% and 0.05%	1 application to the affected area every evening	Natroba contains two upstroke letters ("t" and "b") whereas Renova has none which may help to differentiate the names. *Strength:* 0.9% vs. 0.02% and 0.05% *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily
Victoza (Liraglutide) [rDNA origin] Injection)	Look	Prefilled pen (18 mg/3 mL) delivering 0.6 mg, 1.2 mg or 1.8 mg per dose	0.6 mg once daily subcutaneously for one week, then increase to 1.2 mg; if 1.2 mg does not result in acceptable glycemic control, the dose can be increased to 1.8 mg subcutaneously once daily	*Dose*: One application or the amount needed to cover scalp and hair vs. 0.6 mg, 1.2 mg or 1.8 mg *Strength:* 0.9% vs. 18 mg/3 mL *Route of administration*: Topical vs. subcutaneous *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily *Dosage form*: Topical suspension vs. Injection

Product name with potential for confusion	**Similarity to Natroba**	**Strength**	**Signa**	**Differentiating Product Characteristics (Natroba vs. Product)**
Natroba (Spinosad) Suspension	**N/A**	**0.9%**	**Apply to dry hair. Leave on for 10 minutes then rinse off with warm water. May repeat treatment after seven days if live lice are seen**	**N/A**
Nelova *The Nelova products were discontinued in the years 1999 to 2002*[11]	Look	Nelova 0.05/35, Nelova 1/35 (Norethindrone and Ethinyl Estradiol) Tablets Nelova 1/50 (Norethindrone and Mestranol) Tablets	1 tablet orally once daily	*Route of administration*: Topical vs. oral *Frequency of administration*: Once, may repeat after 7 days if needed vs. once daily

[11]Data provided by Thomson & Thomson's SAEGIS ™ Online Service, available at (www.thomson-thomson.com). Accessed on July 13, 2010.

This is a representation of an electronic record that was signed electronically and this page is the manifestation of the electronic signature.

/s/

LORETTA HOLMES
10/22/2010

DENISE P TOYER
10/22/2010