Safety Assessment of Butyrospermum Parkii (Shea)-Derived Ingredients as Used in Cosmetics

Status:	Scientific Literature Review for Public Comment
Release Date:	March 22, 2016
Panel Meeting Date:	June 6–7, 2016

All interested persons are provided 60 days from the above release date to comment on this safety assessment and to identify additional published data that should be included or provide unpublished data which can be made public and included. Information may be submitted without identifying the source or the trade name of the cosmetic product containing the ingredient. All unpublished data submitted to CIR will be discussed in open meetings, will be available at the CIR office for review by any interested party and may be cited in a peer-reviewed scientific journal. Please submit data, comments, or requests to the CIR Director, Dr. Lillian Gill.

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INTRODUCTION

The *Butyrospermum parkii* (shea)-derived ingredients detailed in this report function mainly as skin and hair conditioning agents in personal care products.[1] This report assesses the safety of the following 10 *Butyrospermum parkii* (shea)-derived ingredients:

Butyrospermum Parkii (Shea) Butter Extract	Hydrogenated Shea Butter
Butyrospermum Parkii (Shea) Butter Unsaponifiables	Hydrogenated Shea Oil
Butyrospermum Parkii (Shea) Nut Extract	Hydrolyzed Shea Seedcake Extract
Butyrospermum Parkii (Shea) Nut Shell Powder	Shea Butter Glyceride
Butyrospermum Parkii (Shea) Seedcake Extract	Shea Butter Glycerides

The CIR Expert Panel (Panel) previously has reviewed the safety of Butyrospermum Parkii (Shea) Oil, Butyrospermum Parkii (Shea) Butter, Butyrospermum Parkii (Shea) Butter Unsaponifiables, and Hydrogenated Shea Butter in the 2011 safety assessment of plant-derived fatty acid oils and found these ingredients are safe for use in cosmetic ingredients.[2] Because data from the previous assessment may be useful in determining the safety of the ingredients listed in this safety assessment, the relevant information has been summarized here in italics.

Botanicals such as *Butyrospermum parkii* (shea)-derived ingredients contain hundreds of constituents, some of which have the potential to cause toxic effects. For example, cinnamates are naturally-occurring sensitizing esters. In this assessment, CIR is reviewing information available to evaluate the potential toxicity of each of the *Butyrospermum parkii* (shea)-derived ingredients as a whole, complex substance. Except for specific constituents of concern, CIR is not reviewing the potential toxicity of the individual constituents found in *Butyrospermum parkii* from which the ingredients in this report are derived.

The ingredient names, according to the *International Cosmetic Ingredient Dictionary and Handbook*, are written as listed above, without italics and without abbreviations. When referring to the plant from which these ingredients are derived, the standard scientific practice of using *italics* will be followed (e.g., *Butyrospermum parkii*). The shea tree is also known taxonomically as *Vitellaria paradoxa* and is referred to as such by many references, including the Food and Drug Administration (FDA).

While shea oleine is not an ingredient listed in the INCI dictionary, toxicity data may be useful in assessing the safety of the *Butyrospermum parkii* (shea)-derived ingredients in a read-across manner. This chemical is listed as a cosmetic ingredient in the FDA Voluntary Cosmetic Registration Program (VCRP) database.

CHEMISTRY

Definition

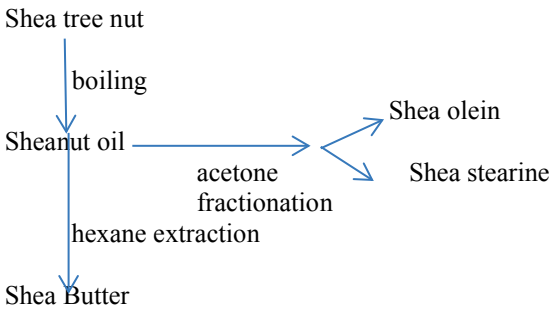
The definitions and functions of the *Butyrospermum parkii* (shea)-derived ingredients included in this report are provided in Table 1.

Chemical and Physical Properties

Physical and chemical properties of the *Butyrospermum parkii* (shea)-derived ingredients in this report are provided in Table 2.

Method of Manufacturing

The general description of the method of manufacturing of different *Butyrospermum parkii* (shea)-derived ingredients is described in the following schematic:[3]



Composition/Impurities

The mean tocopherol concentrations and fatty acid compositions of *Butyrospermum parkii* (shea)-derived ingredients are provided in Table 3 and Table 4, respectively. While *Butyrospermum parkii* grows mainly in equatorial Africa, subtle differences in geographic location and climate affect the levels of the natural compounds, such as tocopherol and fatty acids, in *Butyrospermum parkii* (shea)-derived ingredients.[4,5]

A study of Butyrospermum Parkii (Shea) Butter (described as kernel fats; n-hexane extraction) from 36 samples from seven different countries found the principal triacylglycerols to be stearic-oleic-stearic (mean 31.2%), stearic-oleic-oleic (27.7%), and oleic-oleic-oleic (10.8%).[6] Triterpene ester contents ranged from 0.5% to 6.5% and consisted of α-amyrin cinnamate (mean 29.3%), butyrospermol cinnamate (14.8%), α-amyrin acetate (14.1%), lupeol cinnamate (9.0%), β-amyrin cinnamate (7.6%), lupeol acetate (7.2%), butyrospermol acetate (5.8%, and β-amyrin acetate (4.9%).

The same researchers also identified the content and composition of triterpene alcohol fractions of the non-saponifiable lipids of Butyrospermum Parkii (Shea) Butter from 36 samples.[7] The shea kernels contain 30-54% fat, of which 2-12% are non-saponifiable lipids. Triterpene alcohol content in the non-saponifiable lipids is 22-72%. The triterpene alcohol fractions contained α-amyrin, β-amyrin, lupeol, and butyrospermol with minor or trace amounts of ψ-taraxasterol, taraxasterol, parkeol, 24-methylene-24-dihydroparkeol, 24-methylenecycloartanol, dammaradienol, and 24-methylenedammarenol.

An analysis of the phenolic constituents of shea kernels by liquid chromatography-mass spectrometry (LC-MS) identified the following catechin compounds: gallic acid, catechin, epicatechin, epicatechin gallate, gallocatechin, epigallocatechin, gallocatechin gallate, and epigallocatechin gallate.[8] Quercetin and *trans*-cinnamic acid were also identified. The mean kernel content of the catechin compounds was 4000 ppm with a range of 2100-9500 ppm.

Shea Olein

The sterol component of shea olein is approximately 8% (w/w), of which approximately 97% is 4,4-dimethylsterols, 2% is 4-demethylsterols and 0.5% is 4-α-methylsterols.[3]

USE

Cosmetic

The safety of the cosmetic ingredients included in this safety assessment is evaluated on the basis of their expected use in cosmetics. The Panel utilizes data received from the FDA and the cosmetics industry in determining the safety of ingredients within that expected use. The data received from the FDA are those it collects from manufacturers on the use of individual ingredients in cosmetics by cosmetic product category in its VCRP, and those from the cosmetic industry are submitted in response to a survey of the maximum reported use concentrations by category conducted by the Personal Care Products Council (Council).

According to 2016 VCRP data, Butyrospermum Parkii (Shea) Butter Extract has the most reported uses of the ingredients listed in this safety assessment in cosmetic products, with a total of 468; about two-thirds of the uses are in leave-on formulations (Table 5). Butyrospermum Parkii (Shea) Butter Unsaponifiables has the second greatest number of overall uses reported, with a total of 69; about half of the uses are in leave-on eye makeup preparations. The results of the concentration of use survey conducted in 2015 by the Council indicate Butyrospermum Parkii (Shea) Butter Unsaponifiables has the highest reported maximum concentration of use; it is used at up to 20% in leave-on night skin care preparations. Butyrospermum Parkii (Shea) Butter Extract is used at up to 5% in leave-on skin preparations. No uses were reported for hydrolyzed shea seedcake extract or shea butter glyceride.

Some of these ingredients may be used in products that can be incidentally ingested or come into contact with mucous membranes. For example, Butyrospermum Parkii (Shea) Butter Extract and Butyrospermum Parkii (Shea) Butter Unsaponifiables are used in lipsticks at up to 2.55%. Additionally, some of these ingredients were reported to be used in hair sprays and body and hand sprays and could possibly be inhaled. For example, Butyrospermum Parkii (Shea) Butter Extract was reported to be used in fragrance preparations at a maximum concentration of 0.025%. In practice, 95% to 99% of the droplets/particles released from cosmetic sprays have aerodynamic equivalent diameters >10 μm, with propellant sprays yielding a greater fraction of droplets/particles below 10 μm compared with pump sprays. Therefore, most droplets/particles incidentally inhaled from cosmetic sprays would be deposited in the nasopharyngeal and bronchial regions and would not be respirable (i.e., they would not enter the lungs) to any appreciable amount.

The *Butyrospermum parkii* (shea)-derived ingredients described in this safety assessment are not restricted from use in any way under the rules governing cosmetic products in the European Union.[9]

Non-Cosmetic

Sheanut oil, from which many of the ingredients of this report is derived, is generally recognized as safe (GRAS) in direct food substances (21CFR§184.1702). It is used in confections and frostings, coatings of soft candy, and sweet sauces and toppings.

Refined sheanut oil is described as a component of a mixture of oils used as a cocoa butter substitute, as a coating, agent, and in margarine and shortening in the *Food Chemicals Codex*, a compendium of internationally recognized standards published by the United States Pharmacopeia (USP) for the purity and identity of food ingredients.[10]

A triterpene-rich extract of *Butyrospermum parkii* has been reported to be used as a dietary supplement for the treatment of osteoarthritis.[11] Other studies have found that components of shea extracts potentially have anti-inflammatory, antioxidant, and anti-tumor effects.[12-15]

TOXICOLOGICAL STUDIES

Acute Toxicity

No relevant published acute toxicity studies on *Butyrospermum parkii* (shea)-derived ingredients were identified in a literature search for these ingredients, and no unpublished data were submitted.

Repeated Dose Toxicity

Shea Olein

In a 13-week rat feeding study, Colworth-Wistar rats received a diet containing 20% (w/w; 10 to 15 g/kg/day) shea oleine or hydrogenated shea oleine.[16] Groups were comprised of 15 male and 15 female rats. Equivalent groups of rats were fed either 20% (w/w) palm oil, soy bean oil, or the hydrogenated equivalents. During the exposure period, body weight, food and water consumption, urine chemistry, and clinical pathology were assessed. At study completion, gross necropsy, organ weighing, and microscopic examination of select tissues and organs were performed.

Results showed that shea oleine diets produced similar biological effects to palm oil and soy bean oil diets. Slightly reduced body weight gain was observed in rats fed either of the shea oleine diets when compared to diets with palm oil and soy bean oil. No significant differences in body weight gains were observed between rats fed hydrogenated shea oleine versus non-hydrogenated shea oleine. Slightly reduced cholesterol levels, increased aminotransferase levels, and lower triglyceride and alanine aminotransferase values were observed in non-hydrogenated diets, as were increases in liver weight and lower liver lipid values. These changes were not considered biologically significant. Also considered biologically non-significant by the authors were raised alkaline phosphatase values and increased food consumption in rats fed hydrogenated shea oleine. The authors of this study concluded that all diets were well tolerated in the rat and none of the findings in this study were considered to be adverse.[16]

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY

Shea Olein

The reproductive toxicity potentials of shea olein and hydrogenated shea olein were assessed in two dietary studies in rats.[17] In study 1, groups of 20 male and 20 female Colworth-Wistar rats received 7% (w/w; 3.5 g/kg/day) of either type of shea olein in their diet for 20 weeks. In study 2, groups of 50 male and 50 female Colworth-Wistar rats received 15% (w/w; 7.5 g/kg/day) of either type of shea olein in their diets for 10 weeks. Both studies also evaluated other commercially available materials, such as shea nut oil, palm oil, and cocoa butter. The rats received the test materials during pre-mating, mating, pregnancy and offspring weaning. Reproduction was assessed using number of litters and pups born plus survival and body weights at birth and at weaning on day 21. Skeletal evaluation using X-ray, clinical pathology and a macroscopic examination were performed on F_1 rats. Parental animal parameters measured were body weight, food consumption, clinical pathology, organ weights and macroscopic examination. Fatty acids and hydrocarbon levels were measured and an evaluation for lipogranulomata in F_0 animals was made for various tissues in Study 2.

Slightly reduced body weight gain, reduced cholesterol, and increased alkaline phosphatase levels were observed. No adverse effects on reproduction were observed in either study for any parameter. Results showed that shea olein and hydrogenated shea olein were comparable to the other commercially available materials used in this

study. The authors concluded that there was no evidence of reproductive toxicity following dietary exposure of shea olein and hydrogenated shea olein in rats at levels equating to greater than 15% (7.5 g/kg/day).[17]

GENOTOXICITY

No relevant published genotoxicity studies on *Butyrospermum parkii* (shea)-derived ingredients were identified in a literature search for these ingredients, and no unpublished data were submitted.

CARCINOGENICITY

Shea Olein

The carcinogenic potential of shea olein was evaluated in a dietary study in Colworth-Wistar rats for 104 weeks.[3] The study also evaluated sheanut oil and palm oil. Groups of 50 male and 50 female rats received diets containing 15% (w/w; approximately equivalent to 7.5 g/kg/day) shea olein, 15% (w/w) sheanut oil, or 15% (w/w) palm oil. The rats were the offspring of the animals used in the reproduction study described above (study 2) and the test diets began at weaning (21 days of age). The following parameters were assessed: mortality, clinical signs of toxicity, body weight, food intake, clinical pathology, organ weights and macroscopic and histopathological changes plus tumor type and incidence evaluation.

Reduced body weight gain and food intake, reduced cholesterol, increased alkaline phosphatase levels, reduced heart weight, and an increased incidence of pulmonary lipidosis were observed in rats fed the shea olein diet. In females fed the shea olein diet, an increase in the number of heptaomas was observed, while in males, an increase in pancreatic exocrine adenomas and skin keratoacanthomas were observed. The increase in the incidence of hepatomas was thought to be related to the high fat content of the diets. The authors concluded that none of the findings in this study were considered to be adverse effects and that shea olein showed no tumorigenic potential at 15% (7.5 g/kg/day) in the rat.[3]

IRRITATION AND SENSITIZATION

Dermal Irritation

Butyrospermum Parkii (Shea) Butter

In an EpiSkin™ in vitro assay, 24.1% Butyrospermum Parkii (Shea) Butter in a lip wax was not an irritant.[2]

Butyrospermum Parkii (Shea) Butter (concentration not reported) produced very slight erythema with or without edema in 2/3 rabbits exposed to the test material for 4 h in an irritation study utilizing occlusive patches. The erythema was resolved with 3 or 4 days of patching. Butyrospermum Parkii (Shea) Butter did not cause primary cutaneous irritation when tested at up to 2%. No irritation to Butyrospermum Parkii (Shea) Butter was observed in volunteers for in-use studies of lip gloss or body/hand massage oils at concentrations up to 45%.

Ocular Irritation

Butyrospermum Parkii (Shea) Butter

While mild conjunctival reactions were observed, undiluted Butyrospermum Parkii (Shea) Butter was considered not irritating when tested in the eyes of male rabbits.[2]

Dermal Sensitization

Butyrospermum Parkii (Shea) Butter

Butyrospermum Parkii (Shea) Butter was not sensitizing in a guinea pig maximization study.[2] The induction concentration was 75% and the challenge concentrations were 20% and 50%. No sensitization was observed in multiple human repeat insult patch tests with products containing Butyrospermum Parkii (Shea) Butter. Concentrations were tested up to 60%.

Phototoxicity and Photosensitization

Butyrospermum Parkii (Shea) Butter

Butyrospermum Parkii (Shea) Butter was not phototoxic in guinea pigs when tested at 10 and 20% in acetone.[2] The test sites were irradiated with UV-B light for 80 seconds followed by UV-A light for 80 min.

SUMMARY

The *Butyrospermum parkii* (shea)-derived ingredients detailed in this report function mainly as skin and hair conditioning agents in personal care products.

According to 2016 VCRP data, Butyrospermum Parkii (Shea) Butter Extract has the most reported uses of the ingredients listed in this safety assessment in cosmetic products, with a total of 468; about half of the uses are in leave-on skin care preparations. Butyrospermum Parkii (Shea) Butter Unsaponifiables has the second greatest number of overall uses reported, with a total of 69; about half of the uses are in leave-on eye makeup preparations. The results of the concentration of use survey conducted in 2015 by the Council indicate Butyrospermum Parkii (Shea) Butter Unsaponifiables has the highest reported maximum concentration of use; it is used at up to 20% in leave-on night skin care preparations. Butyrospermum Parkii (Shea) Butter Extract is used at up to 5% in leave-on skin preparations.

Sheanut oil is generally recognized as safe (GRAS) in direct food substances. It is used in as a cocoa butter substitute in confections and frostings, coatings of soft candy, and sweet sauces and toppings. It is also used as a margarine or shortening. Components of shea extracts have potential anti-inflammatory, antioxidant, and anti-tumor effects.

In a 13-week rat feeding study, shea oleine or hydrogenated shea oleine did not produced adverse effects. No reproductive effects were observed in rats fed shea oleine or hydrogenated shea oleine for up to 20 weeks. No tumorgenic potential or adverse effects to shea oleine in a carcinogenicity study in the offspring of the rats from the reproductive study.

In a previous safety assessment, Butyrospermum Parkii (Shea) Butter was not a dermal or ocular irritant or dermal sensitizer in non-human studies. This ingredient was not a dermal irritant or sensitizer in human studies at concentrations up to 60%. Butyrospermum Parkii (Shea) Butter was not phototoxic in a guinea pig study.

No relevant published acute toxicity, genotoxicity, or clinical studies on *Butyrospermum parkii* (shea)-derived ingredients were identified in a literature search for these ingredients and no unpublished data were submitted.

DATA NEEDS

CIR is seeking additional data on the methods of manufacturing, composition, and irritation and sensitization of the 10 *Butyrospermum parkii* (shea)-derived ingredients described in this report. Information on any additional toxicological data, especially for these ingredients in formulation at use concentration, would help the CIR Expert Panel assess the safety of the use of these ingredients in cosmetics and would improve the resulting safety assessment.

TABLES AND FIGURES

Table 1. Definitions and functions of the ingredients in this safety assessment.

Ingredient/CAS No.	Definition	Function
Butyrospermum Parkii (Shea) Butter Extract CAS No. 91080-23-8	Butyrospermum Parkii (Shea) Butter Extract is the extract of Butyrospermum Parkii (Shea) Butter. The accepted scientific name for *Butyrospermum parkii* is *Vitellaria paradoxa*.	skin-conditioning agents - miscellaneous
Butyrospermum Parkii (Shea) Butter Unsaponifiables CAS No. 194043-92-0; 225234-14-0	Butyrospermum Parkii (Shea) Butter Unsaponifiables is the fraction of shea butter which is not saponified in the refining recovery of shea butter fatty acids. The accepted name for *Butyrospermum parkii* is *Vitellaria paradoxa*.	hair conditioning agents; skin-conditioning agents - miscellaneous
Butyrospermum Parkii (Shea) Nut Extract CAS No. 91080-23-8	Butyrospermum Parkii (Shea) Nut Extract is the extract of the nuts *of Butyrospermum parkii*. The accepted name for *Butyrospermum parkii* is *Vitellaria paradoxa*.	skin-conditioning agents - emollient
Butyrospermum Parkii (Shea) Nut Shell Powder CAS No. 91080-23-8	Butyrospermum Parkii (Shea) Nut Shell Powder is the powder obtained from the dried, ground nut shells of *Butyrospermum parkii*. The accepted scientific name for *Butyrospermum parkii* is *Vitellaria paradoxa*.	abrasives
Butyrospermum Parkii (Shea) Seedcake Extract CAS No. 91080-23-8	Butyrospermum Parkii (Shea) Seedcake Extract is the extract of the seedcake of *Butyrospermum parkii*. The accepted name for *Butyrospermum parkii is Vitellaria paradoxa*.	skin protectants
Hydrogenated Shea Butter	Hydrogenated Shea Butter is the end product of the controlled hydrogenation of Butyrospermum Parkii (Shea) Butter.	skin-conditioning agents – occlusive; viscosity increasing agents - nonaqueous
Hydrogenated Shea Oil CAS No. 93333-83-6	Hydrogenated Shea Oil is the end product of the controlled hydrogenation of Butyrospermum Parkii (Shea) Butter.	skin conditioning agents – emollient; skin-conditioning agents - occlusive
Hydrolyzed Shea Seedcake Extract	Hydrolyzed Shea Seedcake Extract is the hydrolysate of an extract of shea seedcake derived by acid, enzyme, or other method of hydrolysis.	not reported
Shea Butter Glyceride	Shea Butter Glyceride is the monoglyceride derived from Butyrospermum Parkii (Shea) Butter.	skin-conditioning agents – emollient; surfactants – emulsifying agents
Shea Butter Glycerides CAS No. 194043-92-0; 1016637-12-9	Shea Butter Glycerides are a mixture of mono-, di-, and triglycerides derived from Butyrospermum Parkii (Shea) Butter.	emulsion stabilizers; hair conditioning agents; skin-conditioning agents – miscellaneous; slip modifiers; surfactants – emulsifying agents; viscosity increasing agents - aqueous

Table 2. Chemical properties for *Butyrospermum Parkii* (Shea)-derived ingredients.[2]

Properties and Constituents	Butyrospermum Parkii (Shea) Butter	Butyrospermum Parkii (Shea) Oil
Appearance	Grey, tallow-like	Pale yellow
Specific gravity	0.918 (15°C)	NR
Refractive index	1.468 (25°C)	NR
Iodine value	45-77	28 - 43
Saponification value	165-190	185-195
Peroxide value (meq/kg)	5.0 max	≤ 10
Melting point (°C)	32-46; 28-42 (slip)	NR
Unsaponifiable matter (%)	3-13	≤ 1.5
Free fatty acids (%)	1.0 max as oleic acid	≤ 0.1 as oleic acid
Titer (°C)	49-54	NR
Acid value	1.5	NR

NR – Not reported.

Table 3. Mean concentrations of tocopherols in 102 Butyrospermum Parkii (Shea) Butter samples by HPLC analysis (μg/g)[4]

α-tocopherol	β-tocopherol	γ-tocopherol	δ-tocopherol	total tocopherol
112	16	38	34	208

Table 4. Total fatty acid composition of *Butyrospermum Parkii* (Shea)-derived ingredients (%) [2,5,18]

Fatty Acids	Butyrospermum Parkii (Shea) Oil	Butyrospermum Parkii (Shea) Butter
Myristic (C14)	NR	0.5
Palmitic (C16)	3.8-4.1	2.6-9
Stearic (C18)	41.2-56.8	25.6-50.2
Oleic (C18:1)	34.0-46.9	37.1-62.1
Linoleic (C18:2)	3.7-6.5	0.6-10.8
Linolenic (C18:3)	NR	0.5 max
Arachidic (C20)	1-2	0-3.5

NR-Not reported.

Table 5. Frequency and concentration of use according to duration and type of exposure for shea ingredients.

	# of Uses	*Max Conc of Use (%)*	*# of Uses*	*Max Conc of Use (%)*	*# of Uses*	*Max Conc of Use (%)*
	Butyrospermum Parkii (Shea) Butter Extract		**Butyrospermum Parkii (Shea) Butter Unsaponifiables**		**Butyrospermum Parkii (Shea) Nut Extract**	
Totals†	**468**	**0.0000095-5**	**69**	**0.01-20**	**NR**	**0.0003-1**
Duration of Use						
Leave-On	324	0.0000095-5	66	0.015-20	NR	0.1-1
Rinse Off	140	0.00028-0.96	3	0.01-2	NR	0.0003-0.51
Diluted for (Bath) Use	4	0.05	NR	NR	NR	NR
Exposure Type						
Eye Area	19	0.5	38	0.16-0.5	NR	NR
Incidental Ingestion	36	0.075-1.9	3	0.25-2.55	NR	NR
Incidental Inhalation -Sprays	10; 111[a]; 92[b]	0.001-0.025; 0.001-0.8[a]; 0.0001[b]	6[a]; 5[b]	0.5[a]	NR	NR
Incidental Inhalation - Powders	2; 8[c]; 92[b]	0.0000095-5[c]; 0.0001[b]	3; 1[c]; 5[b]	0.06	NR	NR
Dermal Contact	409	0.0001-5	61	0.051-20	NR	0.0003-1
Deodorant (underarm)	1[a]	0.05	NR	NR	NR	NR
Hair - Non-Coloring	23	0.001-0.96	5	0.01-0.5	NR	0.01-0.1
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	0.01	NR	NR	NR	NR
Mucous Membrane	116	0.00028-1.9	3	0.051-2.55	NR	0.0003-0.51
Baby Products	10	0.1	1	4	NR	NR

	Butyrospermum Parkii (Shea) Nut Shell Powder		**Butyrospermum Parkii (Shea) Seedcake Extract**		**Hydrogenated Shea Butter**	
Totals†	**2**	**0.00028-1**	**2**	**0.0002-5.5**	**22**	**NR**
Duration of Use						
Leave-On	2	0.01-1	2	0.0002-5.5	11	NR
Rinse Off	NR	0.00028-0.5	NR	0.0003-2	11	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	NR	0.0002-5.5	NR	NR
Incidental Ingestion	NR	NR	NR	3	1	NR
Incidental Inhalation -Sprays	1[b]	NR	2[a]	0.0095-4; 0.01[a]	1; 5[a]; 3[b]	NR
Incidental Inhalation - Powders	1[b]	NR	NR	0.0012-5[c]	3[b]	NR
Dermal Contact	2	0.00028-1	2	0.0002-5.5	14	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	0.01	NR	0.001-0.99	7	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	3-5	NR	NR
Mucous Membrane	NR	0.00028-0.0011	NR	0.0003-3	4	NR
Baby Products	NR	NR	NR	5	NR	NR

	Hydrogenated Shea Oil		**Shea Butter Glycerides**		**Shea Oleine**	
Totals†	**NR**	**0.1**	**31**	**NR**	**3**	**NR**
Duration of Use						
Leave-On	NR	0.1	24	NR	3	NR
Rinse Off	NR	NR	7	NR	NR	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	4	NR	NR	NR
Incidental Ingestion	NR	NR	NR	NR	NR	NR
Incidental Inhalation -Sprays	NR	NR	13[a]; 3[b]	NR	1; 1[a]	NR
Incidental Inhalation - Powders	NR	NR	3[b]	NR	NR	NR
Dermal Contact	NR	0.1	27	NR	1	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	4	NR	2	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	2	NR	NR	NR
Baby Products	NR	NR	1	NR	NR	NR

NR = Not reported.

† Because each ingredient may be used in cosmetics with multiple exposure types, the sum of all exposure types may not equal the sum of total uses.

[a.] It is possible these products may be sprays, but it is not specified whether the reported uses are sprays.

[b.] Not specified whether a powder or a spray, so this information is captured for both categories of incidental inhalation.

[c.] It is possible these products may be powders, but it is not specified whether the reported uses are powders.

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