Cosmetic Product Safety Report

Product name:	**Dhiva hand and elbowcream**		
Company name:	**Dhiva Cosmetics**	**Version:**	**1**
Formula number:		**Date:**	**November 2016**

Part A: Cosmetic Product Safety Information

The following information is gathered and managed in the Dhiva Cosmetics product database (the product information file, PIF) under the relevant section.

1. Quantitative and qualitative composition of the cosmetic product, **Dhiva hand and elbowcream composition (see Appendix A – Quantitative and qualitative composition of the cosmetic product)**.
2. Physical/chemical characteristics and stability of the cosmetic product: **Stability clearance (see Appendix B – Stability summary)**.
3. Claim support **(see Appendix C – Claim support summary).**
4. Microbiological quality: **Microbiological clearance (see Appendix B – Stability summary).**
5. Impurities, traces, information about the packaging material: **Packaging clearance (see Appendix B – Stability summary)**.
6. Normal and reasonably forseeable use: Label specifications **(see 2. Labelled warnings and instructions of use).**
7. Exposure to the cosmetic product: **MoS calculation (see Appendix D – Margin of Safety calculations).**
8. Exposure to the substances: **Exposure calculation (see Appendix E – Exposure assessment** and assessment **below).**
9. Toxicological profile of the substances**(see Appendix F - Toxicological profiles for ingredients).**
10. Undesirable effects and serious undesirable effects: **Data from reports on (serious) undesireable effects (see Part B: Cosmetic Product Safety Assessment).**
11. Information on the cosmetic product**: User Test (see Appendix C – Claim support summary).**

Part B: Cosmetic Product Safety Assessment

1. Assessment conclusion

The cosmetic product **Dhiva hand and elbowcream** can be assessed as **safe** for normal and reasonably foreseeable use in accordance with the European Cosmetics Regulation (EC) No 1223/2009.

2. Labelled warnings and instructions of use

The following warnings and instructions of use are mentioned on the packaging material/label of the product:

Instructions of use: Use on dry skin of hands and elbows daily. [No warnings are mentioned on the label of the product].

Further labelled warnings and instructions of use are not needed as the product labelling and the general description of the product is sufficient to define the use of the product as **hand and elbowcream** for daily use.

There are no ingredients incorporated in the finished product, which require additional directions, specific indications or warnings in accordance to the relevant Annexes of the European Cosmetics Regulation (EC) No 1223/2009 (as amended) or due to their toxicological and/or physical-chemical properties or because of their concentrations in the finished product.

3. Reasoning

The safety assessment of Dhiva hand and elbowcream is based on the toxicological profile of each ingredient and evaluation of the PIF[A] collected data on the product. The product is produced using Good Manufacturing Practice for cosmetics and Microbial Quality Management in the production facilities and further along the storage. Procedures also include microbiological control of raw materials, bulk and finished products, packaging material, personnel, equipment and preparation and storage rooms.

Physical/chemical characteristics, stability and microbiological quality of the cosmetic product

The stability data of the formula after storage meet the specified characteristics of the product specifications. The data confirm a sufficient stability of the tested formula. Based on the stability results from the accelerated stability test and that the product is waterfree:
The shelf life for the final product is **24 months**[B].
The Period After Opening (PAO) is **12 months**.

Impurities, traces and information about the packaging material

No impurities and/or traces were detected in the final product or in the ingredients at levels that may have an impact on the safety of the finished product.

The product packaging material is:
50 ml transparent hdPE jar containing UV filters with coloured cap
The interactions/suitability between the formulation and the packaging were validated in **accelerated stability tests** (see packaging clearance in Appendix B). The packaging material is evaluated to be suitable and safe for use.

Normal and reasonably foreseeable use

The labelling as hand and elbowcream in combination with the general description of the product on the label supports the safe use of the product during intended and reasonably foreseeable use. (Unintended) reasonably foreseeable use (not a misuse) is not recognisable.

Exposure to the cosmetic product and the substances[C]

The calculation of the exposure to the product and to each of the ingredients in the cosmetic product was carried out according to the "SCCS's Notes of Guidance for the testing of cosmetic ingredients and their safety evaluation, 9th revision 2015"(see Appendix C). The additional exposure of elbows has been calculated as 20 % of the default hand surface.

[A] *Tip: A product information file (PIF) is a paper or electronic dossier where all information on the product and ingredients are stored. Regulation (EC) No 1223/2009 states in Article 11 what the product information file should contain.*
Summary of PIF content

- *A clear connection between the cosmetic product and the product information (traceability).*
- *The cosmetic product safety report (CPSR)*
- *Method of manufacture and GMP statement on compliance with good manufacturing practice (GMP).*
- *Claim support if claims are used*
- *Animal testing information or non-animal testing certificate of the cosmetic product and its ingredients.*

https://www.cosmeticseurope.eu/publications-cosmetics-europe-association/guidelines.html?view=item&id=85

[B] *Tip: The shelflife and PAO is a case to case evaluation made based on the various tests performed. There is no common formula to use.*

[C] *Tip: The calculation of exposure should be in accordanc with the labelled use. For common products you can find default values of skin area and amount of cream normally used* in SCCS's "Notes of Guidance for the testing of cosmetic ingredients and their safety evaluation, 9th revision 2015". *For products not mentined in this guideline you need to assess the skin area and measure the amount of cream used.*

Toxicological profile of the substances
All raw materials and ingredients in the finished product were assessed as safe by the safety assessor for the use as cosmetic ingredients in the finished product. The safety of a cosmetic product is based on the safety of its ingredients. For this product that is based on edible fats with an acceptability for use on skin based on testing with formulated products made with these ingredients, it is assessed that a reduced battery of toxicological data is sufficient to ascertain the safety of the final product. Edible fats are composed of triglycerides with an oral uptake of >80 % and a moderate dermal uptake of 10 %. Their longtime safe use as foods ensures a lack of adverse effects for the much lower systemic exposures that is possible after dermal exposure.

The Margin of Safety (MoS) calculated for each of the substances contained in the cosmetic product is above 100, which supports the safety of the cosmetic product. See the calculation of MoS in Appendix D.

Undesirable effects and serious undesirable effects
The information about undesirable effects and serious undesirable effects is kept up-to-date and regularly made available to the safety assessor.
This is a fictive product and therefore the product does not have any adverse event reporting.

Information on the cosmetic product
A User Test with Dhiva hand and elbowcream conducted in Sweden with 98 participants, Dec. 2015-Jan. 2016 did not indicate any potential for dermal irritation (fictive user test). The test included expert grading of skin dryness, which were reduced during the test period (see Appendix C).

4. Assessor's credentials and approval of part B

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Date and signature of the safety assessor.

Proof of the safety assessor's qualification can be found in the safety assessor Curriculum Vitae (normally enclosed).

Appendix A – Quantitative and qualitative composition of the cosmetic product

Composition of Dhiva hand and elbowcream

INCI name of ingredient	Content in % weight	Function in product
Butyrospermum parkii butter	26.67	Skin conditioning
Theobroma cacao seed butter	26.67	Skin conditioning
Mangifera indica seed butter	26.67	Skin conditioning
Canola oil	9.8	Skin conditioning
Prunus amygdalis sativa kernel oil	9.59	Skin conditioning
Calendula officinalis flower extract	0.3	Skin conditioning
Bisabolol	0.3	Skin conditioning
Total:	**100.00**	

Further information on the chemical identity of the ingredients is stated in **Appendix F - Toxicological profiles for ingredients.**

Appendix B – Stability summary

Product name:	**Dhiva hand and elbowcream**	**Product number in the database:**	
Company name:	**Dhiva Cosmetics**	**Version:**	**1**
Formula number:	**1**	**Date:**	**November 2016**

Stability testing ensures that the functionality and aesthetics of the product are not adversely impacted during its intended shelf life and consumer use. Testing can be conducted under controlled accelerated or real-time conditions. The stability summary includes physical, chemical and microbiological stability along with compatibility between the product and packaging used.

Physical stability summary

Includes stability and physical integrity of the product under appropriate conditions for storage, transport and use.
The physical stability study has been conducted according to stability protocol. For this product an accelerated storage at 40°C for 3 months has been applied.

Appearance / colour / odour

Dhiva hand and elbowcream is a firm yellow, naturally fragranced cream.

After 3 months of accelerated storage at 40°C, the Dhiva hand and elbowcream routine production batch 1/2016 in packaging 50 ml (HDPE) (appearance / odour / colour) comply.

pH

pH not measured as this is a water free product.

Viscosity

The viscosity values of routine production batch 1/2016 during the stability testing complies with the current specifications at the time of production and shelf life.

Viscosity T0 (physica, 45 1/s) : 250 000 mPas +/- 50000 mPas
Viscosity Shelf life (physica, 45 1/s) : 250 000 mPas +/- 50000 mPas

Light stability

Cosmetics, for which the packaging may allow the product to be exposed to light, should undergo light stability testing. The light used in testing should simulate the intensity to which the cosmetic will likely be exposed. All these tests are compliant.

Microbiological stability summary[D]

Dhiva hand and elbowcream is a waterfree cream based entirely on oils and fats thereby not enabling microbiological growth. Raw material review has assessed this product to be a microbiologically safe product. No testing is necessary.

[D] *Tip: For microbiological testing of cosmetic products see the following guidance document*
http://www2.mst.dk/udgiv/publications/2010/978-87-92668-66-0/pdf/978-87-92668-67-7.pdf

Chemical stability[E]

Dhiva hand and elbowcream is a waterfree cream based entirely on oils and fats. No preservatives have been added. No testing of preservatives is necessary for this product.

Packaging clearance[F]

The packaging material is a 50 ml transparent hdPE jar containing UV filters with coloured cap. This package does not contain hazardous materials that require special markings or labelling. Based on the package testing results, which complies with the package development procedures, it is the opinion of the Packaging Development Department that this package is acceptable for distribution of the product.

Conclusion

The Dhiva hand and elbowcream is considered compliant and acceptable for consumers based on the tests of the accelerated stability program in 50 ml HDPE jars. Compatibility between the product and packaging employed is ensured by the tests employed. Based on the results from all stability testing, the shelf life is 24 month and the period after opening is 12 months.

Signed by Head of lab

[E] *Tip: If you use preservatives, check with a chemical analysis that the amount of preservative in your product is according to recipe also at end of shelf life. Vi forstår ikke helt dette? Mængden af preservative mindsker med tiden for nogen af stofferne og da bliver konververingseffekten ringere. Hvis man bruger et konserveringmiddel med kortere håldbarhed må man nedbringe håldbarhedstiden.*

[F] *Tip; If you do not use material specifically certified for cosmetic use you need to ensure that the analysed level of migrating chemicals in your cosmetic product is safe.*

Appendix C – Claim support summary

Product name:	**Dhiva hand and elbowcream**	**Product number in the database:**	
Company name:	**Dhiva Cosmetics**	**Version:**	**1**
Formula number:		**Date:**	**November 2016**

The claim support[G] for the product Dhiva hand and elbowcream is stated below. This product is a fictive product for demonstration purposes only and therefore no label is available.

	English master text	Danish translation
Label text	Developed to support dry skin	Udviklet til tør hud

Claims for this product are supported by the following tests:

A safety-in-use test on final formula Dhiva hand-and elbowcream, enabling to support the claim as support to dry skin.

Conducted in Sweden with 98 participants, Dec. 2015-Jan. 2016. Test includes expert grading of skin dryness. See PIF[A] for full study report.

Document signed by R&D Team

[G] *Tip: For each claim on the label you need a claim support, at least a clinical study in vivo or in vitro laboratory test or a consumer use test or a literature reference. Commission Regulation (EU) no 655/2013 of 10 July 2013 laying down common criteria for the justification of claims used in relation to cosmetic products: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0655&from=EN Guidelines to the Regulation: http://ec.europa.eu/consumers/sectors/cosmetics/files/pdf/guide_reg_claims_en.pdf*
Note: Claim support is normally not part of the safety assessment but of the PIF. It is added here to illustrate how it can be solved.

Appendix D – Margin of Safety calculations

Based on the SCCS Notes of Guidance for the testing of cosmetic ingredients and their safety evaluation. 9th Revision, September 2015.

$$P = dermal\ absorption\ fraction$$

$$Systemic\ exposure\ dose;\ SED = \left(\frac{Conc}{100}\right) * P * E_{derm}$$

$$MoS = \frac{NOAEL}{SED}$$

It is generally accepted that Margin of Safety (MoS) should, at least, be 100 to declare an ingredient safe for use. This is the case for all the ingredients in this product. It is not expected that bisabolol (a penetration enhancer) can affect the oil and fat ingredients in a way that increases their dermal absorption above the selected 10 % and thereby increases the systemic dose (SED) used in the MoS calculation. For the marigold extract a full 100 % dermal absorption is already used in the calculation.

Calculation of Margin of Safety (MoS) for the INCI ingredients of the product

Product name:	Dhiva handcreme		Ederm [mg/kg/d]=	43,2
Formula number:	Fictional product		Hands and elbows	
Product number:	PR-02			

INCI ingredient	Conc [%]	P	NOAEL [mg/kg/d]	Info	SED [mg/kg/d]	Margin of Safety
Canola oil	9,8	0,1	5000	*	0,42336	11810
Prunus amygdalis sativa kernel oil	9,59	0,1	7500	****	0,414288	18103
Butyrospermum parkii butter	26,670	0,1	7500	*	1,152144	6510
Theobroma cacao seed butter	26,670	0,1	7500	****	1,152144	6510
Mangifera indica seed butter	26,670	0,1	2500	****	1,152144	2170
Calendula officinalis flower	0,3	1	50	*,*****	0,1296	386
Bisabolol	0,3	1	850	*	0,1296	6559
	100,0000					

*: NO(A)EL available from distributor/supplier or from literature

****: Calculation of the NO(A)EL reasoned by analogy (for instance food, structure, medical uses etc.)

*****: Calculation of the NO(A)EL via the TTC concept

Appendix E – Exposure assessment

Basic data from The SCCS Notes of Guidance for the testing of cosmetic ingredients and their safety evaluation. 9th Revision, September 2015.

Calculation of the Exposure of a Hand and elbowcream

In this part, the amount of the substance and the frequency of human exposure to the substance are determined (including specific groups at potential risk, e.g. children, pregnant women, etc.). If the default values fit the labelled recommended use, the default values can be used. Otherwise it is necessary to perform an assessment of quantity of product used per day.
For the hand and elbowcream, the default values are used for the hands. Additionally the exposure to elbows is assessed as 20 % of the hand exposure.

Average body weight **K**:	Adult user: 60 kg (1)
Way of exposure:	Dermal (1)
Kind of exposure:	Leave on product (1)
Quantity per day hands G_{HA}:	2.16 g/day (1)
Quantity per day elbows $\mathbf{G_{EL}}$:	0.432 g/day [add 20 % of hand area for use on elbows] (2)
Retention factor leave on $\mathbf{R_{HA+EL}}$:	1 (100 %)
Dermal absorption fraction **P**:	Not applicable here as Mos is calculated per ingredient, see each toxprofile

Dermal exposure (Edermal)

$$\mathbf{E_{dermal} = (G_{HA} + G_{EL}) * R_{HA+HE} / K}$$
$$= (2.16+0.432) * 1 / 60$$
$$= 0.0432 \text{ g/kg bw/day}$$
$$\mathbf{= 43.2 \text{ mg/kg bw/day}}$$

References

1. The SCCS Notes of Guidance for the testing of cosmetic ingredients and their safety evaluation. 9th Revision, September 2015.
2. Internal usage data

Appendix F[H] - Toxicological profiles for ingredients

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Shea Butter.

Supplier

General toxicological profile for demonstration purposes.

Purities

Refined food-grade vegetable fat (triglycerides). Refined food-grade quality is acceptable for cosmetic use.

Composition

INCI name	Generic name	Concentration	CAS No	EC No
Butyrospermum Parkii Butter	Shea butter	100 %	194043-92-0, 91080-23-8 (6)	293-515-7

Impurities[I]

Free fatty acids <1 % (4). A low level of free fatty acid is a sign of high purity and thus acceptable for cosmetic use.

Function

Skin conditioning, viscosity controlling (6).

Regulatory status

Not regulated in (EC) No 1223/2009.

[H] *Tip: All toxicological profiles shall be kept updated and a new date shall be noted when a profile is updated. It is recommended to update a profile, when new data is available, using a new supplier or other relevant information.*

[I] *Tip: Impurities are batch and supplier dependent and needs to be updated when changing supplier and to be checked for each batch upon arrival. For traces of forbidden substances, safe limits should be established and included into the ingredient's specifications in the PIF.*

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	High >500 Da (Molar weight of shea butter is 3*average molecular weight of the fatty acids+38.049 for glycerol backbone)	
Log Pow	Not determinded	(3)
Description	Soft white fat (triglycerides) / mild fatty odour Solid at room temperature, not soluble in water	(3) (4)
Water solubility	Not soluble	(3)

Toxicological data

Acute toxicity: No data. Acute toxicity data should be used if available, but data on acute toxicity are not mandatory for assessing the safety of cosmetic ingredients.

Corrosivity and irritation: Not irritating (4, 8).

Skin sensitisation: Not sensitising (4, 7, 9).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm^2	Comments / reasoning	Reference
Butyrospermum Parkii Butter	10 %	By analogy to vegetable oils	(5)

Repeated toxicity: No data. The repeated dose study is preferred as basis for the NOAEL value, but if data are not available, other data have to be used. In this case, a NOAEL from the rat reproductive toxicity study is used.

Mutagenicity: No data. In this case, it is assessed that it is acceptable with no data on mutagenicity as there is a negative carcinogenicity study in rats.

[J] *Tip: According to SCCS/1564/15, the basic and minimal physical-chemical specifications for any cosmetic ingredient to be evaluated are:*
1) Chemical identity;
2) Physical form;
3) Molecular weight;
4) Characterisation and purity of the chemical including isomer composition;
5) Characterisation of the impurities or accompanying contaminants;
6) Solubility;
7) Partition coefficient (Log Pow);
8) Relevant physical and chemical specifications;
9) Homogeneity and stability.
However, these parameters need to be adjusted for ingredients obtained directly from nature as most data are not available for these natural UVCB mixtures. In general, physical-chemical specifications should be available from the supplier of the cosmetic ingredient and where relevant they should be attached to batch number.

Carcinogenicity: Not carcinogenic (104 weeks, rat, feeding study, 15 % Shea- Olein) (2).

Reproductive toxicity: Not reprotoxic (rat, feeding study, 7-15 % Shea-Olein); NOAEL: Above 7500 mg/kg bw/day (1).

Toxicokinetics: Oral digestibility in feed for chicken lower than for soybeen oil but comparable to cocoa fat (10).

Phototoxicity: Not phototoxic (4).

Human data: Not irritating (4, 8).

Others: Longtime safe use as a cosmetic ingredient, food ingredient and cocoa replacement (9, 10). Mainly used in leave-on products and in up to 60 % concentration (4). It is acceptable to use analogous data to other purified nut oils as these mainly differ in composition of the fatty acids.

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Butyrospermum Parkii Butter	A NOAEL of 7500 mg/kg bw/day from the rat reprotox study (1).	No data

Conclusion

It is assessed that human dermal test data are the most important for butyrospermum Parkii Butter, as the substance has been used safely as a food and cosmetic ingredient without any history of adverse reactions. The NOAEL from the reproductive toxicity study is assessed to be acceptable for use in the MoS calculation.

Overall, butyrospermum Parkii Butter is assessed to be safe for use as a cosmetic ingredient in the hand and elbow creme.

Reference list

1. Baldrick P, Robinson JA, Hepburn PA (2001). Reproduction studies in the rat with shea oleine and hardened shea oleine. Food Chem Toxicol. 39 (2001) 923-30.
2. Carthew P, Baldrick P, Hepburn PA (2001). An assessment of the carcinogenic potential of shea oleine in the rat. Food Chem Toxicol 39 (2001) 807–815.
3. Material Safety Data Sheet, BioChemica International, 1275 S. Patrick Drive Suite P, Satellite Beach, FL, 32937, USA.
4. CIR, 2010a. Vegetable Oils, Nut oils, CIR Expert Panel Meeting, August 30-31, 2010 and updated Blue, Plant-Derived Fatty Acid Oils Group, CIR Expert Panel Meeting, March 3-4, 2011.
5. Lee EJ, Gibson RA, Simmer K. (1993) Transcutaneous application of oil and prevention of essential fatty acid deficiency in preterm infants. Arch Dis Child 68:27-8.
6. CosIng Europen Commission cosmetic database. Search “Butyrospermum parkii butter”,date: 19.08.2015.
7. Chawla KK, Bencharitiwong R, Ayuso R, Grishina G, Nowak-Węgrzyn A. (2011) Shea butter contains no IgE-binding soluble proteins. J Allergy Clin Immunol. 2011 Mar;127(3):680-2.
8. Loden M, Andersson A C (2008) Effect of topically applied lipids on surfactant-irritated skin. British Journal of Dermatology. Volume 134, Issue 2, pp 215–220.

9. Malachi O.I. 2014. Effects of Topical and Dietary Use of Shea Butter on Animals. American Journal of Life Sciences. Vol. 2, No. 5, 2014, pp. 303-307. doi: 10.11648/j.ajls.20140205.18.
10. Dei HK, Rose SP, Mackenzie AM. (2006). Apparent metabolisable energy and digestibility of shea (Vitellaria paradoxa) fat, cocoa (Theobroma cacao) fat and soybean oil in broiler chicks. Br Poult Sci. 2006 Oct;47(5):607-12.

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Cocoa butter, White.

Supplier

General toxicological profile for demonstration purposes.

Composition

INCI name	Generic name	Concentration	CAS No	EC No
Theobroma cacao seed butter	Cocoa butter	100 %	84649-99-0 / 8002-31-1 (6)	283-480-6

Impurities[I]

Free fatty acids <2 % (1), which indicates a high purity and therefore acceptable.

Function

Emollient, masking, skin conditioning, skin protecting agent (6).

Regulatory status

Not regulated in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	Mixture of triglycerides, >500 Da	(8)
Description	Solid white fat with chocolate-y aroma, not soluble in water.	(2)
Log Pow	Not determined	
Solubility in water	Insoluble	(2)

Toxicological data

Acute toxicity: Oral LD_{50} >5000 mg/kg for rats for stearic acid (4).

Corrosivity and irritation: No data. This is a fat with a lot of human data from use in cosmetic products not indicating any irritative effect, so it is acceptable that no old animal data or new methods *in vitro* data are available.

Skin sensitisation: Similar refined nut oils show no or little allergenic potential (3).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm^2	Comments / reasoning	Reference
Theobroma cacao seed butter	10 %	Analogy with vegetable oils.	(5)

Repeated toxicity: No data. Edible fat with longterm safe use as raw material for chocolate and cosmetic products. In this case a lack of repeated toxicity data is acceptable.

Mutagenicity: No data. Edible fat with longterm safe use as raw material for chocolate and cosmetic products. In this case a lack of mutagenicity data is acceptable.

Carcinogenicity: No data. Edible fat with longterm safe use as raw material for chocolate and cosmetic products. In this case a lack of carcinogenicity data is acceptable.

Reproductive toxicity: No data. Edible fat with longterm safe use as raw material for chocolate and cosmetic products. In this case a lack of reproductive toxicity data is acceptable.

Toxicokinetics: Oral digestibility in feed for chickens is similar to shea butter but lower than for soybeen oil (7).

Phototoxicity: No data. Acceptable, as cocoa butter is not presumed to absorb light.

Human data: A cream formulation containing 14 % stearic acid, tested for 4 weeks gave no irritation to human subjects (4).
Not a dermal irritant, HRIPT with 150 µl test material, semi-occluded, 106 subjects (3).

Others: Edible fat with longterm safe use as raw material for chocolate and cosmetic products. In this case a general lack of data is acceptable. It is acceptable to use data from other refined nut oils for read across as they mainly differ in the composition of the fatty acids.

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Theobroma cacao seed butter	No NOAEL was found for Theobroma cacao seed butter, but from analogy with shea butter a NOAEL of 7500 mg/kg bw/day will be used. Both are tree nut oils consisting of a triglyceridemixture and can be assumed to have similar toxicological properties in repeated dose studies and therefore acceptable for read across.	No data

Conclusion

It is assessed that human dermal test data are the most important for theobroma cacao seed butter, as the substance has been used safely as a food ingredient and in cosmetic products without any history of adverse reactions. The dermal absorption is moderate, and systemic toxicity after dermal application is not expected. The NOAEL from the reproductive toxicity study with shea olein is considered acceptable for read across for use in the MoS calculation.

Overall, Theobroma cacao seed butter is assessed to be safe for use as a cosmetic ingredient in the hand and elbow creme.

Reference list

1. COA Cocoa butter deodorized (189750) Premier Specialties Inc. 236 Blackford Avenue Middlesex NJ 08846 (Jan. 2009).
2. MSDS Cocoa butter white (189350) Premier Specialties Inc. 236 Blackford Avenue Middlesex NJ 08846 (July 2013).
3. CIR, 2010a. Vegetable Oils, Nut oils, CIR Expert Panel Meeting, August 30-31, 2010 and updated Blue, Plant-Derived Fatty Acid Oils Group, CIR Expert Panel Meeting, March 3-4, 2011.
4. EFSA External scientific report. Supporting Publications 2012:EN-274. Reports on toxicokinetics, toxicity and allergenicity data on substances to be evaluated as acceptable previous cargoes for edible fats and oils.
5. Lee EJ, Gibson RA, Simmer K. (1993) Transcutaneous application of oil and prevention of essential fatty acid deficiency in preterm infants. Arch Dis Child 68:27-8.
6. CosIng, European Commission cosmetic database. Search CAS #: 8002-31-1, date 20.08.2015.
7. Dei HK, Rose SP, Mackenzie AM. (2006). Apparent metabolisable energy and digestibility of shea (Vitellaria paradoxa) fat, cocoa (Theobroma cacao) fat and soybean oil in broiler chicks. Br Poult Sci. 2006 Oct;47(5):607-12.
8. Triglyceride Molecular weight calculator http://biodieseleducation.org/TOOLS/Calculators/Molecularweight_calculator.html

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Mango Butter.

Supplier

General toxicological profile for demonstration purposes.

Composition

INCI name	Generic Name	Concentration	CAS No	EC No
Mangifera Indica Seed Butter	Mango butter	100 %	90063-86-8 (1)	290-045-4

Impurities[I]

<0.5 % free fatty acids (5). A low level of free fatty acid is a sign of high purity and thus is assessed to be accetable for cosmetic use.

Function

Skin conditioning agent (2).

Regulatory status

Not regulated in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	High >500 Da due to mostly (80-90%) Stearic acid (C18), Oleic acid (C18:1), Linoleic acid (C18:2) acid	(8, 9)
Description	Soft pale yellow semi-solid fat, slightly fatty odor, extracted from the fruit of the mango tree.	(1)
Log Pow	Not determined	
Solubility in water	Not soluble	(1)

Toxicological data

Acute toxicity: No data. Acute toxicity data should be used if available, but data on acute toxicity are not mandatory for assessing the safety of cosmetic ingredients.

Corrosivity and irritation: Not a known skin irritant (1).

Skin sensitisation: No data, but similar refined nut oils are not sensitising (4).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm^2	Comments / reasoning	Reference
Mangifera Indica Seed Butter	10 %	By analogy to vegetable oils	(6)

Repeated toxicity: Analogy to the African bush mango kernel extract: Subchronic study, rats (20/sex/group) were administered via gavage 0, 100, 1000 and 2500 mg/kg bw/day of the African bush mango kernel extract for 90 days: NOAEL > 2500 mg/kg bw/day (3).

Mutagenicity: Analogy to African bush mango kernel extract: African bush mango kernel extract did not reveal any mutagenicity or genotoxicity in Ames assay, *in vitro* and *in vivo* chromosomal aberration tests and *in vivo* micronucleus assay (3).

Carcinogenicity: No data, but is assessed as acceptable as there are negative mutagenicity data from a similar extract from African bush mango kernel.

Reproductive toxicity: No data, but the similar shea olein is not reprotoxic (rat, feeding study, 7-15 % Shea-Olein); NOAEL: Above 7500 mg/kg bw/day (7).

Toxicokinetics: No data, but mango butter is mainly composed of stearic acid, which makes it similar to cocoa butter and shea butter.

Phototoxicity: No data. Acceptable, as mango butter is not presumed to absorb light.

Human data: HRIPT on 102 subjects, 9 % Mangifera Indica Seed Butter in a body product: not a sensitiser (4). HRIPT on 100 subjects, 1 % Mangifera Indica Seed Butter in a facial Lotion: not a dermal irritant or sensitiser (4).

Others: Similar to shea and cocoa butter. It is acceptable to use data from other refined nut oils or vegetable oils for read across as they differ mainly in the compositon of the fatty acids.

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Mangifera Indica Seed Butter	The oral NOAEL of 2500 mg/kg bw/day by analogy with the African bush mango kernel extract from the 90-day repeated toxicity study in rats (3).	No data

Conclusion

It is assessed that human dermal test data are the most important for Mangifera Indica Seed Butter, as it has been used safely as a food ingredient and in cosmetic products without any history of adverse reactions. The dermal absorption is moderate, and systemic toxicity after dermal application is not expected. The NOAEL from the 90-day repeated toxicity study in rats with the African bush mango kernel extract is considered acceptable for read across and for use in the MoS calculation.

Overall, mango butter is assessed to be safe for use as a cosmetic ingredient in the hand and elbow creme.

Reference list

1. Biochemica international, no date. MSDS Mango Butter-Ultra Refined item code #: MB001.
2. Cosing, 2013. European Commission cosmetic database. Search: “Mangifera Indica Seed Butter”, date: 22nd July 2013 http://ec.europa.eu/consumers/cosmetics/cosing/.
3. Kothari SC., et al., 2012. Subchronic toxicity and mutagenicity/genotoxicity studies of Irvingia gabonensis extract (IGOB131). Food and Chemical Toxicology 50 (2012) 1468– 1479.
4. CIR, 2011. Final Report on Plant-Derived Fatty Acid Oils as used in cosmetics. Cosmetic Ingredient Review. March 4, 2011.
5. Specifications from Charbhuja, Mumbai, India.
6. Lee EJ, Gibson RA, Simmer K. (1993) Transcutaneous application of oil and prevention of essential fatty acid deficiency in preterm infants. Arch Dis Child 68:27-8.
7. Baldrick P, Robinson JA, Hepburn PA (2001). Reproduction studies in the rat with shea oleine and hardened shea oleine. Food Chem Toxicol. 39 (2001) 923-30.
8. Kaphueakngam P, Flood A, Sonwai S (2009). Production of cocoa butter equivalent from mango seed almond fat and palm oil mid-fraction. As. J. Food Ag-Ind, 2(04), 441-447.
9. Triglyceride Molecular weight calculator http://biodieseleducation.org/TOOLS/Calculators/Molecularweight_calculator.html

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Not identified.

Supplier

General toxicological profile for demonstration purposes.

Composition

INCI name	Generic Name	Concentration	CAS No	EC No
Canola Oil	Rape seed oil	100 %	120962-03-0	601-748-6

Impurities[I]

According to specifications from supplier but usually free fatty acid content should be <0.1 % in Canola oil (2). Content of free fatty acids is a measure of the quality of the oil.

Function

Emollient and skin conditioning (1).

Regulatory status

Not restricted in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	High >500 Da	(7)
Description	Canola Oil is an oil derived from Brassica napus L., Brassicaceae, low in erucic acid.	(1)
Log Pow	Not determined	
Solubility in water	Not soluble	(2)

Toxicological data

Acute toxicity: No data. Acute toxicity data should be used if available, but data on acute toxicity are not mandatory for assessing the safety of cosmetic ingredients.

Corrosivity and irritation: Not a dermal irritant (2).

Skin sensitisation: Not considered a skin sensitiser (2).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm²	Comments / reasoning	Reference
Canola oil	10 %	By analogy to vegetable oils	(5)

Repeated toxicity: Subchronic oral toxicity (90d, rat, feeding study, 10 %), NOAEL 5000 mg/kg/d, analogy from castor oil (3).

Mutagenicity/Genotoxicity: Not mutagenic, analogy from castor oil (3).

Carcinogenicity: No data, but is assessed as acceptable as this is an edible oil and there are negative mutagenicity data from the similar ricin oil (3).

Reproductive toxicity: No data, but the similar shea olein is not reprotoxic (rat, feeding study, 7-15 % Shea-Olein); NOAEL: Above 7500 mg/kg bw/day (6).

Toxicokinetics: 10 % dermal absorption, by analogy to vegetable oils (5).

Phototoxicity: No data. Acceptable, as canola oil is not presumed to absorb light.

Human data: Several human studies have been performed, where oral intake of canola oil has been investigated in relation to blood lipid characteristics (4).

Others: Canola oil is a commonly used food oil and ingredient in cosmetic products, so a general lack of toxicological data is acceptable. It is assessed that refined vegetable oils and nut oils can be used interchangeable for analogy or read across as they mostly differ in the composition of fatty acids.

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Canola Oil	5000 mg/kg/d, analogy from castor oil (3)	No data

Conclusion

It is assessed that human dermal test data are the most important for Canola oil, as it has been used safely as a food ingredient and in cosmetic products without any history of adverse reactions. The dermal absorption is moderate, and systemic toxicity after dermal application is not expected. The NOAEL from the 90-day repeated toxicity study in rats with Castor oil is considered acceptable for read across and for use in the MoS calculation.

Canola Oil is assessed to be safe for use as a cosmetic ingredient in the hand and elbow creme.

Reference list

1. CosIng, European Commission cosmetic database. Search: “Canola oil” Accessed March 10th 2016.
2. CIR Final report on the Safety Assessment of Plant-Derived Fatty Acid Oils as Used in Cosmetics, 2011.
3. NTP working group: Toxicity studies of castor oil in F344/N rats and B6C3F1 mice (dosed feed studies). NTP Toxicity Report, Series Vol: Tox 12, 1992.
4. Toxnet database. Search “Canola oil” accessed March 10th 2016.
5. Lee EJ, Gibson RA, Simmer K. (1993) Transcutaneous application of oil and prevention of essential fatty acid deficiency in preterm infants. Arch Dis Child 68:27-8.
6. Baldrick P, Robinson JA, Hepburn PA (2001). Reproduction studies in the rat with shea oleine and hardened shea oleine. Food Chem Toxicol. 39 (2001) 923-30.
7. Triglyceride Molecular weight calculator http://biodieseleducation.org/TOOLS/Calculators/Molecularweight_calculator.html

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Sweet almond oil.

Supplier

General toxicological profile for demonstration purposes, supplier not specified.

Composition

INCI name	Generic name	Concentration	CAS No	EC No
Prunus amygdalus dulcis oil	Sweet almond oil	100 %	8007-69-0 / 90320-37-9 (1)	616-913-8 / 291-063-5

Impurities[I]

Free fatty acids <1 % (3). Content of free fatty acids is a measure of the quality of the oil.

Function

Skin conditioning (1).

Regulatory status

Not regulated in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	High >500 Da	(8)
Description	Clear oily liquid, pale yellow.	(1)
Log Pow	3.47	(7)
Solubility in water	Not soluble	

Toxicological data

Acute toxicity:

Oral LD_{50} in rats >5000 mg/kg bw (2).
Dermal LD_{50} in rabbits >5000 mg/kg bw (2).

Corrosivity and irritation: Products containing up to 25 % Sweet almond oil are practically non-irritating to rabbit skin and only minimally irritating to rabbit eyes (4). 100 % sweet almond oil: slightly irritating to rabbit skin (4).

Skin sensitisation: Maximisation assay using guinea pigs: non-sensitising (4).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm^2	Comments / reasoning	Reference
Prunus amygdalus dulcis oil	10 %	By analogy to vegetable oils	(6)

Repeated toxicity: No data. The repeated dose study is preferred as basis for the NOAEL value, but if data are not available, other data have to be used. In this case, a NOAEL by read across from the rat reproductive toxicity study with shea olein is used (5).

Mutagenicity/Genotoxicity: No data. Acceptable, as this is an edible oil with long term safe use.

Carcinogenicity: No data. Acceptable, as this is an edible oil with long term safe use.

Reproductive toxicity: Not reprotoxic (rat, feeding study, 7-15 % Shea-Olein); NOAEL: Above 7500 mg/kg bw/day (5).

Toxicokinetics: Well digested by oral route in humans (97 %) (4). A study of percutaneous absorption in male rats indicates lower absorption with almond oil than other vegetable oils (4).

Phototoxicity: No data. Acceptable, as sweet almond oil is not presumed to absorb light.

Human data: Formulations containing 0.1 % - 2.0 % Prunus Amygdalus Dulcis (Sweet Almond) Oil, tested for photosensitisation in a total of 764 subjects, did not manifest photosensitivity in any of the test subjects (4).

Others: Edible oil with long term safe use both as food and as cosmetic ingredient, so a general lack of toxicological data is acceptable. Read across to shea olein is acceptable as both oils are purified nutoils where the fatty acid composition is different.

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Prunus amygdalus dulcis oil	By analogy with shea olein, a NOAEL of 7500 mg/day from the rat reprotoxicity study is used for the MoS calculation (5).	No data

Conclusion

It is assessed that human dermal test data are most important for Prunus amygdalus dulcis oil, as it has been used safely as a food ingredient and in cosmetic products without any history of adverse reactions. The NOAEL from the reproductive toxicity study with shea olein is considered acceptable for read across and therefore for use in the MoS calculation.

Prunus amygdalus dulcis oil is assessed to be safe for use as a cosmetic ingredient in the hand and elbowcream.

Reference list

1. Cosing, European Commission cosmetic database. Search: “prunus amygdalus dulcis oil”, date: 12th August 2015 http://ec.europa.eu/consumers/cosmetics/cosing/.
2. HSDB: ALMOND OIL CASRN: 8007-69-0 Data accessed: 12th August 2015. http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/f?./temp/~JG72zV:3.
3. CIR, 2011. Final Report on Plant-Derived Fatty Acid Oils as used in cosmetics. Cosmetic Ingredient Review. March 4, 2011.

4. CIR, 2010. Cosmetic Ingredient Review “Sweet Almond (Prunus Amygdalus dulcis) oil and almond meal”. 2010 CIR Compendium.
5. Baldrick P, Robinson JA, Hepburn PA (2001). Reproduction studies in the rat with shea oleine and hardened shea oleine. Food and chemical toxicology : an international journal published for the British Industrial Biological Research Association 39:9 2001 Sep pg 923-30.
6. Lee EJ, Gibson RA, Simmer K. (1993) Transcutaneous application of oil and prevention of essential fatty acid deficiency in preterm infants. Arch Dis Child 68:27-8.
7. HSDB Almond oil
8. Triglyceride Molecular weight calculator http://biodieseleducation.org/TOOLS/Calculators/Molecularweight_calculator.html

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Ringblom extrakt, Germany.

Supplier

General toxicological profile for demonstration purposes.

Composition

INCI name	Generic Name	Concentration	CAS No	EC No
Calendula officinalis flower extract	Marigold extract	100 %	84776-23-8	283-949-5

Impurities[I]

Usually no impurities of relevance. Supercritical CO_2 extractions yields extracts without residues. This is confirmed by supplier.

Function

Masking, perfuming, skin conditioning (1).

Regulatory status

Not regulated in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	Mixture of substances from 162->900 Da	(2)
Description	CO_2 total extract from flowers, deep yellow wax or oil with characteristic odour.	(5)
Log Pow	Not determined	
Solubility in water	Not soluble	(5)

Toxicological data

Acute toxicity: LD_{50} oral >4640 mg/kg in rats (4).

Sub-acute toxicity: LD_{50} in a 14-day dd-mice study >20ml/kg (4).

Corrosivity and irritation: Non-irritating (4).

Skin sensitisation: Non-sensitising (4).

Dermal absorption (per substance)

INCI name	Value in % or mg/cm²	Comments / reasoning	Reference
Calendula officinalis flower extract	100 %	Default/No data	

Repeated toxicity: 90 day drinking water study in Wistar rats, LOEL 50 mg/kg/day based on mild histopathological findings in the liver (3).

Mutagenicity/Genotoxicity: Negative (4).

Carcinogenicity: Not carcinogenic (4).

Reproductive toxicity: No data, but a reproductive and developmental toxicity study of coriander oil, containing almost 80 % linalool and approximately 20 % of other terpenes reported developmental toxicity only at maternally toxic levels. The NOEL was determined to be 160 mg/kg per d (4).

Toxicokinetics: No data.

Phototoxicity: Not phototoxic (4).

Human data: In clinical testing, cosmetic formulations with up to 1.0 % Calendula officinalis extract were not irritating in short-term tests, not irritating in cumulative irritation tests, and not sensitising in RIPT tests (4).

Others: Petals of marigold are generally accepted as edible. A threshold of toxicologic concern analysis, using conservative assumptions about dermal absorption, applied to a number of chemicals found in Calendula officinalis flowers and resulted in systemic exposure values below the threshold of toxicologic concern values established for the relevant Cramer class. Except for the following components in marigold: quercetin, kaempferol, and isorhamnetin. Available NOAELs on these components suggested that these components would not present any toxicity at concentrations used in cosmetics (2).

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL oral/dermal	NOAEC inhalation
Calendula officinalis flower extract	Oral LOEL 50 mg/kg bw/day based on mild histopathological findings in the liver (3). As the findings is evaluated to be non-adverse, the LOEL is used as a NOAEL value without the addition of extra safety factors. It is assumed that the oral absorption is god why a correction of the NOAEL is not necessary.	No data

Conclusion

Based on a TTC analysis of a majority of ingoing components in Calendula officinalis flower extract, and a further assessment of the NOAEL values of three components above TTC levels combined with backtracking data to individual NOAEL values for each component, Re et al. assessed that the TTC analysis is sufficiently conservative. Combined with another NOAEL, obtained with the full flower extract, in the MoS calculation, it is assessed that Calendula officinalis flower extract is safe for use as a cosmetic ingredient in up to 0.3 % of the final product in the hand and elbow cream.

Reference list

1. CosIng, European Commission http://ec.europa.eu/consumers/cosmetics/cosing/index.cfm?fuseaction=search.details&id=74930
2. Re TA et al. (2009). Application of the threshold of toxicological concern approach for the safety evaluation of calendula flowers (*Calendula officinalis*) petals and extracts used in cosmetic and personal care products. Food Chem Toxicol 47(6):1246-54.

3. Lagarto A et al, (2011). Acute and subchronic oral toxicities of *Calendula officinalis* extract. Exp Toxicol Pathol 63(4):387-91.
4. Final Report on the safety assessment of *Calendula officinalis* (2010), International Journal of Toxicology 29 (Suppl 4):221-243.
5. Marigold Flower CO2-TO Extract (Organic) datasheet.

Toxicological profile for a cosmetic raw material

The assessment is performed according to the European Cosmetics Regulation (EC) No 1223/2009.

Trade name

Not identified.

Supplier

General toxicological profile for demonstration purposes.

Composition

INCI name	Chemical Name	Concentration	CAS No	EC No
Bisabolol	α,4-Dimethyl-α-(4-Methyl-3-Pentenyl)-3-Cyclohexene-1-Methanol	>93 % isolated from natural source	23089-26-1 / 515-69-5	208-205-9

Impurities[I]

<5 % impurities, <0.5 % of other compounds as bisabolene, bisabolol oxide, farnesol, chemazulene and nerolidol (2) as suggested as safe by CIR[K].

Function

Masking, skin conditioning, soothing (1).

Regulatory status

Not regulated in (EC) No 1223/2009.

Physical-chemical properties[J]

Property	Value	Reference
Molecular weight	222.72	(3)
Description	Unsaturated monocyclic sesquiterpene alcohol, clear to yellowish oily liquid with a characteristic odor	(2)
Log Pow	4.8	(5)
Solubility in water	Not soluble	(5)

Toxicological data

Acute toxicity: Oral LD_{50} in rats: 14.9 ml/kg in males and 15.6 in female (2). Oral LD_{50} in mice: 15.1 ml/kg (2).

Corrosivity and irritation: Not irritant (2).

Skin sensitisation: Not sensitising GPMT (2).

Dermal absorption

INCI name	Value in % or mg/cm2	Comments / reasoning	Reference
Bisabolol	100 %	Default value	

[K] *For a detailed impurity profile, batch data from supplier needed. As this is a fictive product, these data are not available.*

Repeated toxicity: Subacute dermal toxicity (28d, rat), NOAEL 200 mg/kg/d (2). 6-week gavage study in Wistar rats NOAEL 850 mg/kg bw/day, no adverse effects highest dose tested (3).

Mutagenicity/Genotoxicity: No mutagenicity/genotoxicity (2).

Carcinogenicity: No data. Acceptable as bisabolol is not mutagenic or genotoxic.

Reproductive toxicity: Teratogenicity (rat), NOAEL 500 mg/kg/d (2).

Toxicokinetics: High dermal absorption, may enhance absorption of other substances (2).

Phototoxicity: Not phototoxic. Not photosensitising (2).

Human data: In a clinical study, a commercial product containing 0.1 % Bisabolol was negative for sensitisation (2).

Others: Bisabolol is the primary constituent of the essential oil from wild chamomile (Matricaria recutita/ Chamomilla recutita (L.) Rauschert) (4).

NOAEL to use for MoS calculation (per substance)

INCI name	NOAEL (mg/kg bw/day)	NOAEC inhalation
Bisabolol	850 mg/kg/day, repeated dose study in rats (2). No correction for low oral absorption is necessary.	No data

Conclusion

It is assessed for this ingredient with low acute toxicity that the summary of toxicological data is sufficient to consider it a safe cosmetic ingredient. The NOAEL from a 6-week study in rats is assessed to be acceptable for use in the MoS calculation.

Bisabolol is assessed to be safe for use as a cosmetic ingredient in the hand and elbow creme.

Reference list

1. CosIng, European Commission cosmetic database. Search: "*Bisabolol*" Accessed 24 February 2016.
2. CIR Final report on the Safety Assessment of Bisabolol as used in Cosmetics, 2015.
3. Bhatia SP, McGinty D, Letizia CS, Api AM. Fragrance material review on a-bisabolol. Food and Chemical Toxicology 46 (2008) S72–S76.
4. Orav A, Raal A, Arak E. Content and composition of the essential oil of Chamomilla recutita (L.) Rauschert from some European countries. Nat Prod Res. 2010;24(1):48-55.
5. MSDS RonaCare® Bisabolol nat. Merck 03.02.2015.