Contact Dermatitis

WILEY

CONTACT DERMATITIS

CONTACT POINT OPEN ACCESS

Alkyl Glucosides in Rinse-Off and Leave-On Cosmetics Available on the Dutch Market

Mounir Yaâkoubi[1] | Norbertus A. Ipenburg[2] | Anton C. de Groot[2] | Thomas Rustemeyer[2]

[1]Amsterdam University Medical Center, Amsterdam, the Netherlands | [2]Dermato-Allergology and Occupational Dermatology, Amsterdam University Medical Center, Amsterdam, the Netherlands

Correspondence: Anton C. de Groot (antondegroot@planet.nl)

Received: 8 March 2026 | **Revised:** 18 May 2026 | **Accepted:** 28 May 2026

Keywords: alkyl glucosides | baby shampoo | cetearyl glucoside | coco-glucoside | decyl glucoside | frequency of use | lauryl glucoside | leave-on cosmetics | rinse-off cosmetics

Alkyl glucosides (decyl, lauryl, cetearyl, coco-, others) are non-ionic surfactants and emulsifiers produced by the reaction of glucose with fatty alcohols. Their use in cosmetics has increased in recent years. These compounds are considered to have a low irritation potential and favourable ecological properties, as they are derived from renewable resources and are biodegradable. Contact allergy and allergic contact dermatitis caused by alkyl glucosides are increasingly recognized. In routine patch testing, positive reactions are reported in up to 2.4% of patients in North America and up to 1.5% in Europe. The majority of these reactions (> 80%) are currently relevant, most often due to the presence of alkyl glucosides in personal care products. Alkyl glucosides are most commonly found in shampoos and body washes marketed for infants. However, data on their presence in cosmetic products are largely limited to the United States (manuscripts under review). We therefore analysed the occurrence of alkyl glucosides in 650 cosmetic products (350 leave-on and 300 rinse-off) available on the Dutch market.

1 | Methods and Results

Ingredient lists of 350 leave-on and 300 rinse-off cosmetics were collected from www.bol.com, the largest online retailer in the Netherlands. Details of the selection procedure and data collection can be found in the Supporting Information Materials and Methods in Data S1.

Details of the cosmetics investigated (brands, countries of origin, number of products per brand and per country) are shown in the Supporting Information Tables S1–S3 (350 leave-on cosmetics) and Supporting Information Tables S4–S6 (300 rinse-off cosmetics).

The presence of the various alkyl glucosides in the 350 leave-on cosmetics is shown in Table 1. 24% of sunscreens, 22% of day creams, 17% of night creams, and 14% of eye creams contained at least one alkyl glucoside, whereas only one of 50 lip salves did. The percentage of all products with ≥ 1 glucoside was 16.9%, which increased to 19.3% when lip salves were excluded.

The most frequently identified alkyl glucoside was cetearyl glucoside (33 products, 9.4%), followed by decyl glucoside (15 products, 4.3%) and arachidyl glucoside (8 products, 2.3%). Few products contained coco-glucoside ($n = 5$), C12-20 alkyl glucoside ($n = 4$), glyceryl glucoside ($n = 3$) or lauryl glucoside ($n = 1$).

The presence of the various alkyl glucosides in the 300 rinse-off cosmetics is shown in Table 2 (separate file). 62% of the baby shampoos, 62% of shower gels, 56% of baby shower gels, 40% of facial wipes, 38% of liquid hand soaps, 32% of shampoos and 28% of cleansing milks contained at least one alkyl glucoside. Of the entire group of 300 rinse-off products, 47.3% contained one or more alkyl glucosides.

The most frequently identified alkyl glucoside was coco-glucoside (101 products, 33.7%), followed by decyl glucoside (31 products, 10.3%) and lauryl glucoside (23 products, 7.7%). Few of these products contained caprylyl/capryl glucoside ($n = 12$), C12-20 alkyl glucoside ($n = 2$), and cetearyl glucoside and glyceryl glucoside (each $n = 1$). Arachidyl glucoside was not present in any product in this category.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2026 The Author(s). *Contact Dermatitis* published by John Wiley & Sons Ltd.

TABLE 1 | Alkyl glucosides identified in 350 leave-on cosmetics by product categories.

	Numbers identified in cosmetic products					
	***n* total**	**Day creams**	**Night creams**	**Sunscreens**	**Eye creams**	**Lip salves**
Alkyl glucosides	**(*n* = 350) (%)**	**(*n* = 100) (%)**	**(*n* = 100) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**
Decyl glucoside	15 (4.3)	2 (2)	1 (1)	10 (20)	2 (4)	
Lauryl glucoside	1 (0.3)				1 (2)	
Cetearyl glucoside	33 (9.4)	15 (15)	13 (13)	1 (2)	4 (8)	
Coco-glucoside	5 (1.4)	3 (3)	1 (1)	1 (2)		
Arachidyl glucoside	8 (2.3)	1 (1)	4 (4)		2 (4)	1 (2)
Glyceryl glucoside	3 (0.9)		1 (1)	1 (2)	1 (2)	
Caprylyl/capryl glucoside	—					
C12-20 Alkyl glucoside	4 (1.1)	2 (2)	1 (1)	1 (2)		
Nr. with ≥ 1 glucoside	59 (16.9)	22 (22)	17 (17)	12 (24)	7 (14)	1 (2)
Nr. with ≥ 1 glucoside excluding lip salves	58 (19.3)					

TABLE 2 | Alkyl glucosides identified in 300 rinse-off cosmetics by product categories.

	Numbers identified in cosmetic products							
	***n* total**	**Baby shampoo**	**Shampoo**	**Baby shower gel**	**Hand soap**	**Shower gel**	**Facial wipes[a]**	**Cleansing milk[a]**
Alkyl glucosides	**(*n* = 300) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**	**(*n* = 50) (%)**	**(*n* = 25) (%)**	**(*n* = 25) (%)**
Decyl glucoside	31 (10.3)	9 (18)	5 (10)	4 (8)	1 (2)	7 (14)		5 (20)
Lauryl glucoside	23 (7.7)	8 (16)	2 (4)	2 (4)	4 (8)	2 (4)	5 (20)	
Cetearyl glucoside	1 (0.3)						1 (4)	
Coco-glucoside	101 (33.7)	23 (46)	10 (20)	25 (50)	16 (32)	26 (52)	1 (4)	
Arachidyl glucoside								
Glyceryl glucoside	1 (0.3)							1 (4)
Caprylyl/capryl glucoside	12 (4)	2 (4)	1 (2)	4 (8)		2 (4)	3 (12)	
C12-20 Alkyl glucoside	2 (0.7)							2 (8)
Nr. with ≥ 1 glucoside	142 (47.3)	31 (62)	16 (32)	28 (56)	19 (38)	31 (62)	10 (40)	7 (28)

[a]Facial wipes and cleansing milks were categorised as rinse-off products for the purpose of this table, although they are technically intermediate products (not strictly leave-on nor fully rinsed off).

2 | Discussion

This study shows that nearly half of the 300 rinse-off products available in the Netherlands from a major online retailer contain one or more alkyl glucosides. The highest proportions were found in baby shampoo (62%), shower gel (62%), and baby shower gel (56%). By far the most frequently identified alkyl glucoside was coco-glucoside, present in one-third of all products, followed by decyl glucoside (10.3%) and lauryl glucoside (7.7%). In leave-on cosmetics, alkyl glucosides were less common. However, when lip balms, which are fatty products that do not contain surfactants and do not require emulsification are excluded, nearly 20% of leave-on products still contained one or more alkyl glucosides. In this category, cetearyl glucoside and decyl glucoside were most frequently identified. Cetearyl glucoside is indeed primarily used as an emulsifier in leave-on formulations (manuscripts under review). The

650 cosmetic products analysed represent a broad range of brands and countries of origin and are available for online purchase in many countries. Our findings may therefore be representative of the situation in other European countries as well.

Since the first report of contact allergy to coco-glucoside and lauryl glucoside in Belgium in 2003 [1], numerous case reports and case series have clearly established the allergenic potential of alkyl glucosides, particularly in cosmetics. Decyl glucoside was identified as a "hidden" allergen in the UV filter Tinosorb M and was responsible for multiple cases of allergic contact dermatitis [2]. Routine patch testing with decyl glucoside 5% pet. has yielded up to 2.4% positive reactions in North America and up to 1.5% in Europe (manuscripts under review).

In Amsterdam, between 1 November 2019 and 5 January 2026, 4343 consecutive patients were patch tested with decyl glucoside 5% pet. and lauryl glucoside 3% pet. Positive reactions were observed in 3.5% of patients to decyl glucoside and in 3.1% to lauryl glucoside (unpublished observations). Generally speaking, approximately 50% of patients allergic to decyl glucoside also react to lauryl and coco-glucoside. Among patients reacting to lauryl glucoside, about two-thirds also showed a positive reaction to decyl glucoside, and many also reacted to coco-glucoside. Co-reactions to cetearyl glucoside in decyl- and lauryl-sensitized patients are less frequent (10%–20%). In contrast, at least half of patients sensitized to cetearyl glucoside also react to other alkyl glucosides (manuscripts under review).

This substantial degree of co-reactivity, possibly reflecting cross-reactivity, implies that patients sensitized to decyl, lauryl, or cetearyl glucoside (the three alkyl glucosides commercially available for patch testing) should avoid cosmetic products containing any alkyl glucoside, and allergic patients should be instructed accordingly. This recommendation considerably restricts the choice of suitable rinse-off products. For further information on contact allergy and allergic contact dermatitis caused by alkyl glucosides, we refer to our review articles on this subject (manuscripts under review).

Author Contributions

Norbertus A. Ipenburg: conceptualization, writing – review and editing. **Anton C. de Groot:** writing – original draft. **Thomas Rustemeyer:** supervision, writing – review and editing. **Mounir Yaâkoubi:** investigation, writing – review and editing.

Funding

The authors have nothing to report.

Disclosure

The authors used ChatGPT (OpenAI, USA) for language editing. All output was reviewed and verified by the authors.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Research data are not shared.

References

1. A. Goossens, T. Decraene, N. Platteaux, A. Nardelli, and V. Rasschaert, "Glucosides as Unexpected Allergens in Cosmetics," *Contact Dermatitis* 48, no. 3 (2003): 164–166, https://doi.org/10.1034/j.1600-0536.2003.00037.x.

2. N. Pereira, I. Coutinho, P. Andrade, and M. Gonçalo, "The UV Filter Tinosorb M, Containing Decyl Glucoside, Is a Frequent Cause of Allergic Contact Dermatitis," *Dermatitis* 24, no. 1 (2013): 41–43, https://doi.org/10.1097/DER.0b013e31827cd36f.

Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Data S1:** Supporting Information. **Table S1:** Brands (alphabetical), countries of origin, number of products by brand per product type and in all products. **Table S2:** Number of brands by country. **Table S3:** Number of products by country. **Table S4:** Brands (alphabetical), countries of origin, number of products by brand per product type and in all products. **Table S5:** Number of brands by country. **Table S6:** Number of products by country.