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Risk Assessment of Over-the-Counter Cannabinoid-Based Cosmetics: Legal and Regulatory Issues Governing the Safety of Cannabinoid-Based Cosmetics in the UAE

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Abstract: Purpose: The lack of scientific evidence of the safety and efficacy of over-the-counter topical cannabinoid-based cosmetics remains a concern. The current study attempted to assess the quality of cannabinoid-based cosmetic products available on the UAE market. In particular, the study attempted to quantify the presence of undeclared tetrahydrocannabinol, specifically delta-9-tetrahydrocannabinol (THC) and delta-9-tetrahydrocannabinolic acid (THCA), in these products. **Methods:** A total of 18 cannabinoid-based cosmetics were collected and analysed in this study. GC-MS analysis was used to determine the presence of total undeclared tetrahydrocannabinol. **Results:** The estimate for the average tetrahydrocannabinol content was 0.011% with a 95% CI (0.004−0.019). Leave-on cosmetics products are more likely to contain total tetrahydrocannabinol compared to rinse-off cosmetics (p = 0.041). Although there was no statistically significant difference in the total tetrahydrocannabinol according to cosmetic category, there was a tendency towards higher tetrahydrocannabinol content in the hand care products, baby products, and body care preparations. **Conclusion:** The current study reveals the need for producers of cannabinoid-based cosmetic products to issue quality certificates for each batch produced to inform users of the tested levels of tetrahydrocannabinol.

Keywords: tetrahydrocannabinol; over the counter; *Cannabis sativa*; cannabidiol

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1. Introduction

Although it is best known as the source of a recreational drug, the *Cannabis sativa* plant has a large variety of other uses, e.g., as an ingredient in food and cosmetics, a textile material, and a medicinal product [1]. The cannabis plant contains various chemical compounds known as cannabinoids, which is a term that initially only encompassed those substances produced by the plant, namely, phytocannabinoids. One of these compounds is tetrahydrocannabinol (THC), which causes psychoactive effects known from the recreational use of cannabis. Moreover, endocannabinoids (endogenous cannabinoids) refer to cannabinoids that are naturally produced within the body as part of the endocannabi-

noid system, while synthetic cannabinoids are manufactured substances that have similar properties to phytocannabinoids [2].

The phytocannabinoid cannabidiol (CBD) has been the focus of attention due to its neurological and anti-inflammatory effects [3–5]. Products containing CBD are often sold over the counter, e.g., as dietary supplements, to circumvent the laws regulating medicinal products.

Substances derived from cannabis, such as hemp oil and other cannabis extracts, are becoming increasingly common ingredients in cosmetics [6]. Recent studies have demonstrated the potential use of cannabinoids to treat dermatological conditions, such as pruritus, skin cancer, and inflammatory skin diseases [7]. For instance, hemp oil is offered on the market as a cosmetic hair treatment, with product manufacturers claiming that the direct application of the oil can moisturise and protect hair, promote hair growth, and repair damaged hair. Despite the lack of scientific evidence supporting these claims, numerous online outlets sell these products, which range in composition from pure hemp oil to shampoos and similar hair treatments containing lower concentrations of hemp oil [8].

EU cosmetics regulations state that all hemp-derived natural raw materials contained in cosmetics must be derived from *Cannabis sativa* plant parts, including seeds, leaves, or leaves without tops, whereby the total THC content must not exceed 0.2%; notably, the flowering or fruiting parts of *Cannabis sativa* generally feature higher THC concentrations. The use of nonfibrous cannabis material with an excess of 0.2% THC (e.g., *Cannabis indica*) is forbidden, and this limit of THC refers only to hemp plants—not to hemp-derived cosmetic ingredients [9]. In contrast, UAE cosmetic regulations state that the manufacturer of any cosmetic product containing hemp oil (*Cannabis sativa* seed oil) or cosmetic oil containing CBD (cannabidiol) must demonstrate that their finished cosmetic products are free from tetrahydrocannabinols by tetrahydrocannabinol content testing in municipal laboratories or accredited laboratories. However, despite these regulations, several cases of contaminated cosmetic products have occurred on the UAE market [10]. For example, a survey of 100 cosmetics and other personal care products available in the UAE found that 13% and 5% of samples were contaminated by yeast/mould and aerobic mesophilic bacteria, respectively [11]. Another study in the same context revealed that 13% (n = 9) of the tested cosmetic and personal care products not only contained formaldehyde above the recommended levels but also did not state on the label that the product contained free formaldehyde or formaldehyde releasers [12].

To the best of our knowledge, our study is the first to assess the quality of cannabinoid-based cosmetic products available on the UAE market. In particular, it aims to quantify the presence of undeclared tetrahydrocannabinol, specifically THC and THCA, in these products. The findings will contribute to ensuring compliance with current regulations and aid in the development of new methods for identifying adulterants in cannabinoid-based cosmetic protects with the aim of ensuring public safety.

2. Methods and Materials

2.1. Sample Collection (Sampling Method)

Stores selling cosmetics and other personal care products were identified via a search of local business directories containing the details of the pharmacies, parapharmacies, and health product sellers in the UAE. The search revealed 2183 separate outlets, which were entered into an Excel spreadsheet that represented the sampling framework, along with all relevant details, e.g., each business name, business address, email address, and phone number. The business ID numbers were subsequently used to generate the study sample via basic random-sample selection. Then, the selected locations were visited to sample the products Figure S1. The main selection criteria were cosmetic or personal care products that were labelled as containing either cosmetic oil with CBD (INCI name Cannabidiol) or hemp oil (INCI name Cannabis Sativa Seed Oil). One package of each product that met both criteria was randomly chosen at each location regardless of its country of manufacture. To enable tracking and to prevent a product from being sampled more than once, each

sample was assigned a code reference number. The following details were recorded for each sample: product name, brand name, batch number, barcode, dosage form, item category, subcategory, size/volume, recommended dose, country of origin/manufacturer, and from which store the product had been purchased. If identical products, i.e., with the same name, formulation, and manufacturer, were being sold at more than one outlet, the first product to be sampled was tested, while the remaining samples were returned. Any products made by different manufacturers but bearing the same name or products offered in different formats, such as an emulsion and a cream, were considered distinct products and tested separately. The products were forwarded to a laboratory for testing on the day of collection.

2.1.1. Instrumentation

The following are the materials used in the sample analysis with the origin of purchase, company, and country.

a. GC-MS-TQ 8030 and GC-MS solution software, Make: Shimadzu, Japan.
b. Rtx-5 MS 15 m × 0.25 mm × 0.25 µm, Cat. log No: 12,620 with a 10 µL sample loop, Make: Restek, Pennsylvania, USA.
c. Analytical balance, Max 200 g range, Make: Sartorius, Goettingen, Germany.
d. Centrifuge, Max 12,000 rpm, Make: Hamilton, USA.
e. Micropipette (100–1000 µL), Make: Transpette, Wertheim, Germany.
f. Sonicator, Make: Qualilife, China.
g. AT-EV-50 Nitrogen evaporator, Make: Athena Technology, India.
h. 50 mL test tubes with cap, Make: Tarsons, Kolkata, India.
i. 10 mL volumetric flasks, Make: Gulf Scientific Glass, Al Hidd, Bahrain.
j. Reagents: deionised water, methanol, hexane, ethyl acetate, chloroform, methanol, 1 N methanolic KOH, and 1 N HCl. All reagents should be of analytical purity.

2.1.2. Acquisition Conditions

GC-MS analysis was performed with the Shimadzu, TQ 8030. For quantification, the Rtx-5 MS 15 m × 0.25 mm × 0.25 µm column was used under the below-mentioned GC-MS conditions and acquisition parameters (Table 1). The peaks of the chromatogram were identified by their mass and by comparing the retention time with those of the standards, and the run time was 20 min.

2.1.3. Preparation of Test Portions

Powders and liquids were homogenised by stirring with spatulas or glass rods. The homogenised material was used for sample preparation.

2.1.4. Sample Preparations

To an approximately 0.5 g homogenous sample of cosmetic cannabinoid products placed in a 10 mL test tube was added 50 µL of ISTD intermediate solution mix (100 µg/L) and 5 mL of a mixture of chloroform/methanol (98:2), and the final mixture was homogenised for 10 min and centrifuged for 5 min at 6000 rpm. The clear solution was separated and evaporated to a residue that was heated at 110 °C, vortexed with 5 mL of methanol, and centrifuged. The clear solution was separated and then mixed with 0.8 mL of 1 N methanolic KOH and 4 mL of a mixture of hexane/ethyl acetate (9:1) and vortexed. The lower layer was separated, acidified with 1 mL of 1 N HCl and 4 mL of water, and vortexed. The upper layer was saved. To the lower layer was added 4 mL of a mixture of hexane/ethyl acetate (9:1), and the mixture was vortex mixed. The organic layer was separated and combined with the saved fraction. The combined organic extract was evaporated under a nitrogen evaporator, and the residue was dissolved in 1 mL of hexane and applied over a 0.5 g silica gel 60 column (make: Millipore, product code: 107733). The column was eluted with 4 mL of hexane, and the eluate was discarded. Further elution with 3 mL of hexane was performed, and the volume of the eluate was reduced by a nitrogen evaporator, reconstituted to 1 mL with hexane, and then analysed.

Table 1. Acquisition conditions.

GC-MS and Acquisition Conditions	
Column Programme	**50 °C (hold 0.10 min) @25 °C, 15 °C/min to 260 °C (15.30 min), 20 °C/min to 300 °C (18 min)**
Injection temperature	280 °C
Injection mode	Splitless
Sampling time	30 min
Flow control mode	Linear velocity
Total flow	46.4 mL/min
Column flow	1.0 mL/min
Carrier gas	Helium
Purge flow	3.0 mL/min
Injection volume	2 µL
Source temperature	250 °C
Transfer line temperature	310 °C
Mode	Positive, 70 eV
THC ions	371, 386
THCA ions	371, 473

2.1.5. Calibration Standards and Internal Standards

Reference Materials

Delta-9-tetrahydrocannabinolic acid (THCA)–(CAS#23978-85-0, SKU#DRE-A17405150 AL-1000 µg/mL) and delta-9-tetrahydrocannabinol (THC)–(CAS# 1972-08-3, SKU#DRE-A17405100 ME-1000 µg/mL) were used as reference materials.

Internal Standards

Delta-9-tetrahydrocannabinolicid-D3 (THCA-D3)–(CAS#1548417-60-2, SKU#T-145-1 ML-100 µg/mL and delta-9-tetrahydrocannabinol-D3 (THC-D3)–(CAS# 81586-39-2, SKU #CAY 19332- 1 mg/mL) were used as internal standards.

Linearity Procedure

Calibration standards were prepared with a range of 2.0 to 50.0 µg/L for delta-9-THC and 10.0 to 200.0 µg/L for THCA with internal standards of 10.0 µg/L for delta-9-THC-D3 and 50.0 µg/L for delta-9-THCA-D3, which were added to the blank matrix. Spiked blank samples were extracted and analysed following previously described sample preparation procedures. The linear and internal standard solutions were prepared with 100% methanol as a diluent. The solution was stored in an amber-coloured glass vial at −20 °C for long-term storage.

2.1.6. Validation Methodology for Quantitative Procedures

The method was fully validated according to the International Conference on Harmonization (ICH) guidelines by determining the linearity, precision, accuracy, limit of detection, and limit of quantification.

- The selectivity of the method was proven with the chromatographic peak resolution obtained between delta-9-tetrahydrocannabinolic acid (THCA) and delta-9-tetrahydrocannabinol (THC).
- The linearity of the method was tested in the range of 2.0 to 50.0 µg/L for delta-9-THC and 10.0 to 200.0 µg/L for THCA, with a correlation coefficient value greater than 0.995.

- The limit of detection (LOD) was determined on analyte-free samples with a signal-to-noise ratio of at least 3:1. The detection limits of the method are shown in Table 2.

Table 2. Limits of detection (LODs).

Std. No.	Analyte	LOD (µg/kg)	LOQ in µg/kg
1	Delta-9-tetrahydrocannabinolic acid (THCA)	10	20
2	Delta-9-tetrahydrocannabinol (THC)	2.0	4.0

- Accuracy and precision

The accuracy and precision procedure was demonstrated at the three QC (LOQ, medium, and high) levels, each with 6 preparations, by comparing the peak area response of extracted analytes (extracted blank sample spiked with the analytes). In this method validation, delta-9-tetrahydrocannabinolic acid (THCA) was spiked at 2.0 µg/kg, 10 µg/kg, and 40 µg/kg, whereas delta-9-tetrahydrocannabinol (THC) was spiked at 10.0 µg/kg, 100 µg/kg, and 180 µg/kg in analyte-free products, such as cosmetic cannabinoid products, which were prepared and analysed for each of the six spike levels. Found %RSD (relative standard deviation) was not more than 20%, and the %Recovery was 70 to 130%.

2.1.7. Quality Control and Quality Assurance (QC/QA) Procedures

1. Quality control standard (QCS): The required amount of methanol was transferred into a 10 mL volumetric flask to produce 100.0 µg/L and 500.0 µg/L Delta-9-THC-D3 and THCA-D3, respectively, and serial dilutions were made. This stock solution should be stored in an amber-coloured glass vial at −20 °C for long-term storage.
2. Quality control and quality assurance (QC/QA) are evaluated from the following.

- Quality control standard: 10.0 µg/L delta-9-THC and 2.0 µg/L THCA standards were prepared from the different/same LOTs separately. Found %Recovery was within 90–110%.
- Quality control sample (QCS): The analyte-free matrix for the quality control sample was prepared as prescribed in sample preparation with spiking at 10.0 µg/kg delta-9-THC and 50.0 µg/kg THCA. Found %Recovery was within 80–120%.
- Duplicate sample preparation: Unknown samples were taken in duplicate. The found percentage of variation was not more than 10%.
- Spike sample preparation: An unknown sample spike was prepared with 10.0 µg/L delta-9-THC and 50.0 µg/kg THCA conc. and prepared the same as prescribed for sample preparation. Found %Recovery was within 80–120%.
- Check Standard: The same standard preparation of 10.0 µg/L Delta-9-THC and 50.0 µg/L THCA was injected at the end of the sequence. Found %Recovery was within 90–110%.

2.1.8. Results Reporting

Delta-9-tetrahydrocannabinolic acid (THCA) and delta-9-tetrahydrocannabinol (THC) were quantified using the ratio of the intensities of the two major fragment ions. The peak area ratio (PAR) for each working solution was calculated by dividing the peak area of the THCA and THC ($AREA_{THCA\ and\ THC}$) by the peak area of the internal standard ($AREA_{IS}$). A calibration curve was constructed from the PAR and the concentration of the standard solutions. A weighing factor of 1/x was used. The analyte concentration was calculated using Y = MX + C.

2.1.9. Ethical Consideration

The study sought and gained approval from the Institutional Review Board of An-Najah National University, reference number (lnt.R. 13 March 2021).

2.1.10. Statistical Analysis

SPSS version 24 (Chicago, IL, USA) was used to perform the data analysis, with all qualitative variables being presented as frequencies or percentages. The total tetrahydrocannabinol content (%), comprising THCA and THC, was measured for each sampled product. Subsequently, the mean total tetrahydrocannabinol content was computed for each product. Mann–Whitney and Kruskal–Wallis tests were used to determine the difference in the total tetrahydrocannabinol content according to sample characteristics; a *p*-value below 0.05 was considered indicative of statistical significance.

3. Results

3.1. Sample Description

Table 3 presents the sample baseline characteristics of the cannabinoid-based cosmetics. A total of 18 cannabinoid-based cosmetics were collected and analysed in this study. The product categories were as follows: three (16.7%) baby products, five (27.8%) body care preparations, three (16.7%) face and neck preparations, three (16.7%) hair and scalp products, two (11.1%) hand care products, and two (11.1%) professional use products. Of the total, 72.2% (n = 13) were leave-on cosmetics, and 27.8% (n = 5) were rinsed-off cosmetics. Among the tested cosmetics, 11.1% were made in the USA and 88.9% were made in the European Union.

Table 3. Number and percentages of sample baseline characteristics (n = 18).

Characteristic	Group	Frequency	Percentage
Product type	Baby product	3	16.7%
	Body care preparations	5	27.8%
	Face and neck preparations	3	16.7%
	Hair and scalp products	3	16.7%
	Hand care products	2	11.1%
	Professional use product	2	11.1%
Product application	Leave on	13	72.2%
	Rinse off	5	27.8%
Country of origin	United States	2	11.1%
	European Union	16	88.9%

3.2. Estimate of the Total Tetrahydrocannabinol in Cannabinoid-Based Cosmetics

The estimate of the mean concentration with a 95% confidence interval (CI) and the standard deviation for the total tetrahydrocannabinol content of cosmetics and personal care products is shown in Table 4. The estimate for the average tetrahydrocannabinol content was 0.011% with a 95% CI (0.004−0.019). The results of the total tetrahydrocannabinol content stratified by the characteristics of each sample are provided in Table 5.

Table 4. Descriptive statistics of the total THC in cannabinoid-based cosmetics.

Total Tetrahydrocannabinol	Descriptive Statistics		
	Mean	**Median**	**±SD**
THC (%)	0.011	0.0070	0.0154

Abbreviations: LOD; limit of detection SD; standard deviation.

Table 5. Tested cannabinoid-based cosmetics according to the total THC and sample characteristics.

Product Description	Application	Cosmetic Category	Country of Origin	Total THC (%)
Moisturising conditioner	rinse off	Hair and scalp products	US	0.0001
Hemp oil moisturising deep conditioner	rinse off	Hair and scalp products	US	0.0001
Exfoliating hand scrub	leave on	Hand care	EU	0.0001
Atopic face and body wash	rinse off	Face and neck preparations	EU	0.0009
Atopic face and body wash	rinse off	Face and neck preparations	EU	0.0009
Atopic hemp oil shampoo	rinse off	Hair and scalp products	EU	0.001
Atopic bath oil	leave on	Body care preparations	EU	0.001
Detoxifying body moisturiser	leave on	Professional use product	EU	0.006
Detoxifying body glow oil	leave on	Professional use product	EU	0.006
Omega-rich moisturiser	leave on	Face and neck preparations	EU	0.008
Atopic body moisturiser	leave on	Body care preparations	EU	0.01
Panthenol cream	leave on	Baby product	EU	0.01
Atopic body moisturiser	leave on	Body care preparations	EU	0.01
Atopic nappy cream	leave on	Body care preparations	EU	0.01
Atopic intensive cream	leave on	Baby product	EU	0.02
Post laser cream	leave on	Body care preparations	EU	0.02
Hemp hand protector	leave on	Hand care	EU	0.05
Nourishing and protecting dry body oil	leave on	Body care preparations	EU	0.05

3.3. Comparison of the Total THC in Cannabinoid-Based Cosmetics According to Sample Characteristics

Table 6 presents the distribution of the total tetrahydrocannabinol content according to sample characteristics. The table also provides the estimates along with *p*-values. These *p*-values were provided from the results of the Mann–Whitney and Kruskal–Wallis tests. There was a statistically significant difference in total tetrahydrocannabinol content according to cosmetic application. Leave-on cosmetics products are more likely to contain total tetrahydrocannabinol compared to rinse-off cosmetics ($p = 0.041$). Although there was no statistically significant difference in the total tetrahydrocannabinol according to cosmetic category, there was a tendency towards higher tetrahydrocannabinol content in the hand care products, baby products, and body care preparations.

Table 6. Comparison of total THC content according to sample characteristics.

			Total THC Content		
Category	**Group**	**N**	**Mean**	**± SD**	***p*-Value**
Product type	Baby product	3	0.0167	0.0058	0.454
	Body care preparations	5	0.0162	0.019	
	Face and neck preparations	3	0.0033	0.0041	
	Hair and scalp products	3	0.00040	0.00052	
	Hand care	2	0.0251	0.035	
	Professional use product	2	0.006	0.00061	
Product application	Leave on	13	0.0155	0.0045	0.041
	Rinse off	5	0.0006	0.00021	

p-values reported above are for comparisons between variable levels "categories–levels" using the Mann–Whitney U-test and Kruskal–Wallis test.

4. Discussion

Despite a lack of research into the effectiveness of over-the-counter topical cannabinoid-based cosmetics, their availability on the market has recently increased. Manufacturers advertise these products as safe treatments for various skin conditions, such as acne, psoriasis, and atopic dermatitis (AD), or as a way to promote healthy hair. Nonetheless, the lack of scientific evidence on the safety and efficacy of these products remains a concern. Given this situation, the current study aimed to examine to what degree these products available on the UAE market contain undeclared tetrahydrocannabinol, specifically THCA and THC.

The current study found that the sampled products had an average tetrahydrocannabinol content of 0.011%. However, the regulatory regime of the UAE stipulates that cannabinoid-based products may contain no tetrahydrocannabinol chemicals, and the adulteration of these consumer products bears substantial risks that considerably outweigh any public health benefits.

Our study is the first to measure to what extent topical cannabinoid-based consumer products contain undeclared tetrahydrocannabinol, thereby contributing to the literature on the safety of cosmetic products containing cannabinoids. Previous research developed a method for detecting the constituents and metabolites of cannabis in hair, thereby allowing cannabis exposure to be determined [12–16].

A study in the UK showed that using hemp oil to cosmetically treat hair can lead to the absorption of THC, cannabidiol (CBD), cannabinol (CBN), and, on rare occasions, even the metabolite 11-hydroxy-delta-9-tetrahydrocannabinol (THC-OH) [8]. This study also demonstrated that when volunteers applied hemp oil to their hair, 89% were found to have absorbed one or more constituents of cannabis, while 33% had absorbed the three major constituents, namely, CBD, THC, and CBN [8]. Moreover, in their study of (self-reported) heavy cannabis users, Taylor et al. found that 77% had traces of THC in their hair, 73% had CBN, and 19% had CBD [17]. Similarly, Franz et al. found that THC-OH concentrations in participants' hair varied between 0.05 and 37.6 pg/mg [18].

The research indicates that exposure to high levels of undeclared tetrahydrocannabinol can adversely affect consumer health, particularly in the form of cannabinoid sensitisation or the development of a cannabinoid allergy, with symptoms ranging from mild to potentially fatal reactions. This sensitisation is particularly of concern because of cross-reactivity with similar substances, such as latex, tobacco, or alcoholic beverages derived from plants or other foods [19]. There is also evidence of cannabis arteritis among young cannabis-consuming adults, which is a severe peripheral vascular disease that can cause a loss of limb use [20]. Moreover, preclinical research has indicated that although cannabinoids can have antineoplastic effects, they might contribute to the early stages of malignant trans-

formation [21]. Based on the abovementioned evidence, there is a clear need to conduct thorough research into the effects of cannabinoid use and to ensure that these effects are used solely for the treatment of dermatological conditions.

Of particular concern is this study's finding that cosmetic products meant to be left on tend to have a higher total tetrahydrocannabinol content than those that are rinsed off. This may be the result of most of the products tested here being marketed as treatments for atopic dermatitis and eczema. These dermatological conditions imply inflammatory dermatoses that can cause the skin barrier to weaken, meaning an increased risk of skin infection for consumers of cosmetic or personal care products adulterated with undeclared tetrahydrocannabinol. In addition, more vulnerable groups, such as the elderly, children below three years of age, and immunocompromised individuals, are particularly susceptible to the effects of adulterated cannabinoid-based products [22]. Finally, products marketed as suitable for application near the eyes are a particular issue due to the fragility of periocular skin [23].

This study has revealed that although cannabinoid-based cosmetics offer potential treatment methods for a variety of inflammatory conditions, there are still several areas of concern. For example, only limited research has demonstrated their efficacy and safety, with most data emerging from preliminary animal studies. In addition, the frequent adulteration of these products with undeclared tetrahydrocannabinol is an important issue. Therefore, it is strongly recommended that current regulations be revised and updated to ensure better compliance for cannabinoid-based cosmetic products. This result can be achieved through the following policies:

- Producers of cannabinoid-based cosmetic products should provide a safety assessment report to provide evidence of the purity of all raw materials used in the manufacture.
- The raw materials used to manufacture cannabinoid-based cosmetic products should undergo quality control testing and meet the agreed standards. Producers should also prevent contamination by controlling the validation process, implementing worker training, and reviewing and improving the cleaning process.
- As part of the treatment programme, dermatologists should enquire about patients' use of cannabinoid-based products; this policy is particularly crucial, given the unsubstantiated claims made by manufacturers as part of their marketing strategies.

5. Conclusions

To date, no research has explored the prevalence of undeclared tetrahydrocannabinol in cannabinoid-based cosmetics on the market in the UAE, and the existing reports on this issue on an international scale lack quantitative analysis. The current study reveals the need for cannabinoid-based cosmetic product producers to issue quality certificates for each batch produced to inform on the tested levels of tetrahydrocannabinol. Furthermore, these products need to be subjected to stricter monitoring and control regarding their safety and quality, which is best achieved through regulations, good manufacturing practices (GMPs), adverse event reporting, research, and education.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/cosmetics8030057/s1, Figure S1: Sample Collection.

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