Ministry of Environment and Gender Equality
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Survey of cannabis-derived ingredients in cosmetic products

Survey of chemical substances in consumer products No. 199

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The title of the report:
Survey of cannabis-derived ingredients in cosmetic products

Purpose of the report:
The purpose of this project is to survey the market for cosmetic products containing cannabis-derived ingredients that a Danish consumer might encounter. The aim is to gain insight into the practices of the cosmetic industry and consumers' accessibility to these products, with a primary focus on the Danish market and, to a lesser extent, the European market. This involves identifying the various types of cosmetic products with cannabis-derived ingredients and associated claims used. Additionally, it involves investigating the specific cannabis-derived ingredients used in the products identified in the survey.

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Contents

Preface

This report describes the results of an investigation into cannabis-derived ingredients in cosmetic products, available for purchase on online stores and online platforms, both Danish and European. Initially, a search was conducted in the European CosIng database, which contains information about cosmetic ingredients and their regulatory status in the EU, to identify permitted cannabis-derived ingredients. This was supplemented with a data extraction of cosmetic products containing cannabis-derived ingredients from the database of the Danish Consumer Council THINK Chemicals, underlying the app *Kemiluppen*. This data was supplemented with interviews of industry-relevant actors and existing knowledge in the field. Finally, a search was conducted across online stores and online platforms for cosmetic products with cannabis-derived ingredients to highlight their applications and associated claims.

The project was carried out in the period from June to December 2023 for the Danish Environmental Protection Agency by Danish Technological Institute.

The project group would like to thank the Danish Consumer Council THINK Chemicals for providing access to their database, underlying the app *Kemiluppen*. At the same time, the project group would like to thank the industry associations, manufacturers, and retailers who were interviewed and contributed knowledge of products and the industry in connection with the preparation of the survey.

The project was followed by:

- Camilla Maria Petersen, The Danish Environmental Protection Agency
- Maria Bundgaard Nymann Hansen, The Danish Environmental Protection Agency

1. Summary

The purpose of this report was to examine the market for cosmetic products containing cannabis-derived ingredients and consumers' access to these products in the Danish and European market. The survey focused on cosmetic products available online and included identifying brands and product types, typical cannabis-derived ingredients and compiling advertised claims. The project was limited to examining skincare products, including both leave-on and rinse-off products. The methodology involved conducting a market survey using data from the database of the Danish Consumer Council THINK Chemicals, visiting online stores and online platforms, and interviewing relevant industry stakeholders.

This report identified ten different cannabis-derived ingredients across 148 different cosmetic products containing cannabis-derived ingredients. The database of the Danish Consumer Council THINK Chemicals, which has chemical data on more than 30,000 consumer products, was examined. Five cannabis-derived ingredients were found:

- Cannabis Sativa Seed Oil (Hemp seed oil)
- Cannabidiol (CBD)
- Cannabis Sativa Seed Extract
- Cannabis Sativa Leaf Extract
- Potassium Hempseedate

In the survey of cosmetic products with cannabis-derived ingredients, 267 products were registered, of which 148 were unique. These 148 products were distributed across 40 different product types and were represented by 59 brands. Creams and lotions constituted the largest product group followed by oils. The majority of the registered products were facial care, aligning with industry information that cannabis-derived ingredients are often more expensive than other ingredients, making them suitable for facial care products, which are often sold in smaller volumes.

For 40 of the brands, only one cosmetic product with cannabis-derived ingredients was registered. For one brand, 24 unique cosmetic products with cannabis-derived ingredients were registered. Brands specializing in cannabis-based cosmetics offered the widest product ranges with cannabis-based ingredients. Online, major retail chains and the department store accounted for a rather small share of cosmetic products with cannabis-derived ingredients. This indicates that smaller specialty stores have a wider range of cosmetic products with cannabis-derived ingredients and have a greater focus on this niche area. Among the 148 unique products registered in the survey, Cannabis Sativa Seed Oil was the most frequently used cannabis-derived ingredient, appearing in 84 % of the products. CBD was found in 44 % of the products, followed by Cannabis Sativa Leaf Extract (11 %) and Cannabis Sativa Seed Extract (7 %). Potassium Hempseedate was found in one product. In addition, five other cannabis-derived ingredients were found, each appearing in one product. Two of these ingredients: Cannabis Sativa Extract and Cannabis Sativa Stem Extract, were not permitted in cosmetic products. Three ingredients: Cannabis Sativa Oil, Cannabis Sativa Herb Oil, and Cannabis Sativa Leaf/Seed Powder were not registered in the CosIng database.

Out of the 68 products containing CBD, 68 % disclosed the added CBD quantity, which varied between 0.08 % and 30 %. Only four products contained synthetically produced CBD, and 17 products were described as containing CBD isolate. Terms like “full-spectrum” and ”broad-spectrum” were less frequently used in cosmetic products.

Among the 148 unique identified products, Cannabis Sativa Seed Oil and CBD were most commonly associated with ingredient-related claims. Ambiguous claims were also observed, and in those cases it was not clear what was specifically claimed, and there was a lack of precise information about usage and ingredients. For Cannabis Sativa Seed Oil, the most common claims were “moisturizing” and “anti-age”, while the most common claims for CBD were “regenerating/healing”, “moisturizing” and “anti-age”. Claims such as “refreshing”,

“strengthening”, “soothing” and “gives glowing skin” were also observed. Some products were claimed to contain CBD extract derived from cannabis resin - a component not permitted in cosmetic products. Numerous products also featured cannabis plant illustrations on the product packaging. It was also noted that some products were advertised by including cannabis-related words such as “CBD” or “hemp” in the product name.

Out of the seven Danish manufacturers who were contacted, only one used CBD in their products. This is consistent with the fact that the majority of the products examined were produced abroad (71 %). However, at the same time as this report was being compiled, the Danish manufacturer in question stopped using CBD in their products. Some manufacturers are awaiting a safety assessment for CBD. One manufacturer could not get a safety report prepared for products containing CBD. The Danish brand that discontinued the production of cosmetic products containing CBD attributed this decision to growing consumer criticism of CBD, due to insufficient documentation of its skin safety, and to their ambition to extend exports to countries where the use of CBD in cosmetics is prohibited. In general, the findings indicated widespread caution among the surveyed Danish manufacturers.

Given the EU Court of Justice´s ruling that CBD does not come within the definition of “euphoric substances” or a “narcotic drug”, CBD is no longer classified as a narcotic in the cosmetics regulation's annex II. As a result, CBD derived from all parts of the cannabis plant is now permitted, provided the psychoactive substance, THC, does not exceed 0.2 %. This has sparked increased interest in incorporating CBD into cosmetic products. However, the cosmetic industry remains cautious due to the lack of documentation of the ingredient's effects on the body and the absence of a safety assessment. The EU Commission's call for safety data on the use of pure CBD and cannabis-derived extracts in cosmetic products has resulted in manufacturers adopting a more cautious stance.

2. Introduction

2.1 Purpose

The purpose of this project is to survey the market for cosmetic products containing cannabis-derived ingredients that a Danish consumer might encounter. The aim is to gain insight into the practices of the cosmetic industry and consumers' accessibility to these products, with a primary focus on the Danish market and, to a lesser extent, the European market. This involves identifying the various types of cosmetic products with cannabis-derived ingredients and associated claims used. Additionally, it involves investigating the specific cannabis-derived ingredients used in the products identified in the survey. Therefore, this survey aims to provide an overview and generate more knowledge of cannabis-derived ingredients in cosmetic products by addressing the following questions:

- Which type of cosmetic product typically contains cannabis-derived ingredients?
- Are there any product types in which the use of cannabis-derived ingredients is more popular and/or widespread than in others? What claims are typically made in the marketing of cosmetic products containing cannabis-derived ingredients?
- Are manufacturers and industry associations familiar with studies on the effects of using cannabis-derived ingredients on the skin?
- How do the cosmetic industry see the future regarding the use of cannabis-derived ingredients?

2.2 Delimitation

This survey focused on cosmetic products that are available online for the Danish consumer. The information in the project was mainly obtained from Danish manufacturers of cosmetic products, Danish industry associations, and Danish retailers of cosmetic products. The project was delimited to investigating skincare products, including both leave-on products and rinse-off products.

2.3 Method

The project included a market survey of cosmetic products containing cannabis-derived ingredients, as well as their associated claims.
This report is based on information obtained through data extraction from the Danish Consumer Council THINK Chemistry, visits to online stores and online platforms, as well as interviews. The procedure for each of these elements is detailed in the following subsections. The method is further elaborated on in the following sections.

2.3.1 Collection of information about cannabis-derived ingredients in cosmetic products

This phase is dedicated to the collection of general knowledge of substances that naturally occur in the cannabis plant, their usage, and the legislation governing their use. This phase also involves gathering information about cannabis-derived ingredients in cosmetic products and follows a structured approach consisting of four key activities:

1. Identification of cannabis-derived ingredients for use in cosmetics:
    - To identify permitted cannabis-derived ingredients in cosmetics, a search was conducted in the CosIng database.
    - CosIng (Cosmetic Ingredient Database) is a European database that contains information about ingredients used in cosmetic products and is regulated by EU legislation. It includes information about the INCI names (International Nomenclature of Cosmetic Ingredients) of the ingredients, their regulation and use in the cosmetic industry, and their properties, based on their usage in the cosmetic industry.

- In the search, keywords such as ”Canna*” were used to identify relevant cannabis-derived ingredients in accordance with applicable cosmetics regulations.

2. Literature search in generally recognized sources:
   - An extensive literature search was conducted in generally recognized sources to gather relevant information about the cannabis plant, its natural substances, and the use of these substances with a particular focus on substances that can be used as ingredients in cosmetics.
   - Sources included scientific articles, reports, and publications, which were reviewed to gain a comprehensive understanding of the subject. The sources are listed in the reference section at the end of the report.
   - Sources from authorities such as the Danish Medicines Agency, the Danish Environmental Protection Agency, the Danish Health Authority, and the Danish Agricultural Agency were included.
   - In addition, searches were conducted in various databases, including:
     - UL Prospector’s database of materials.
     - The database of the European Chemicals Agency (ECHA) of registered substances.
     - The database of the Danish Environmental Protection Agency (EPA) of chemical substances in consumer products.

     These sources and databases served as primary sources of information about the cannabis plant, its active substances, its areas of application, as well as the legislation governing it.

3. Data extraction from the database of the Danish Consumer Council THINK Chemicals, who founded the Danish app called *Kemiluppen*:
   - Based on the cannabis-derived ingredients for cosmetic products identified in activity 1, data was extracted from the database of the Danish Consumer Council THINK Chemicals underpinning *Kemiluppen*.
   - The data extraction was used to obtain specific information about the use of cannabis-derived ingredients in cosmetic products.
   - Ingredients stated in CosIng, which were found in products in this database, were included in the search during the survey phase.

4. Interviews with relevant experts, manufacturers, and industry associations:
   - Interviews were conducted with manufacturers, retailers, and representatives from the cosmetic industry. These interviews provided valuable insight and expert knowledge regarding cannabis-derived ingredients in cosmetic products, supplementing the collected information.

Overall, these four activities formed the basis for gathering knowledge about cannabis-derived ingredients in cosmetic products, their usage, and associated claims. The results of this knowledge collection will create the basis for further analysis and assessment of the cosmetic products with cannabis-derived ingredients that are available on the market for Danish consumers in both Danish and European markets.

2.3.2 Industry Interviews

To explore the cosmetic industry’s perception of the use of cannabis-derived ingredients in cosmetic products, interviews were conducted with five stakeholders in the cosmetic industry. These interviews were conducted either online or by phone. The five stakeholders were selected as they represent a broad spectrum of actors in the industry's value chain. They included:

- Two industry associations.
- A larger Danish retail chain, offering both private label and own brands, with a broad emphasis on cosmetics and personal care products.

- A larger Danish cosmetics manufacturer.
- A larger Danish brand focusing on natural skincare.

Contact was also made with three additional manufacturers who, however, did not have cosmetic products with cannabis-derived ingredients in their range. An online specialty store was also contacted, but they did not wish to contribute to the survey through an interview. The interviews were based on an interview guide (based on the main questions outlined in section 2.1) that was adapted to the individual actor's role in the industry, e.g., an industry association, manufacturer, or retailer. The purpose of the interviews was to gain insight into the cosmetic industry's general understanding of, and reasons for, using claims in the marketing of cosmetic products with cannabis-derived ingredients. Additionally, the interviews were intended to contribute to and support the results from visits to online stores and from the literature search. The collected knowledge included, among other things:

- The industry's general knowledge of cosmetic products with cannabis-derived ingredients.
- Criteria for claims made for these products.

2.3.3 Survey of cosmetic products containing cannabis-derived ingredients on online stores and online platforms

The market was surveyed for cosmetic products containing cannabis-derived ingredients, focusing on products that a Danish consumer would typically find online. In this context, various online stores were visited to gain a better understanding of what is available for the Danish consumer.

From September 7 to September 23, 2023, 13 online stores selling cosmetic products were visited. They included:

- The retail chain Føtex.
- The retail online store Coop.
- The department store Magasin.
- The chain stores Matas, Sephora, and The Body Shop.
- The health food chain store Helsam.
- The health food online stores Jala Helsekost, Helsebixen, and Med24.
- The online pharmacy chain Webapoteket.
- The specialized online stores Hemphilia and Naturecell that focus on the sale of cosmetic products with cannabis-derived ingredients.

To broaden the insight into the available products on the European market, searches were carried out on the global online marketplaces eBay and Google Shopping, a service from Google that allows consumers to search for products across various online retailers.

In the online stores, all cosmetic products with cannabis-derived ingredients were registered. However, on eBay and Google Shopping, where several thousand products are presented, only the products displayed on the first page were examined.

Based on data extraction from the database of the Danish Consumer Council THINK Chemicals, products on online stores and online platforms were searched by using specific INCI names related to the cannabis plant and its derived ingredients. These included "Cannabis Sativa Seed Oil", "Cannabis Sativa Seed Extract", "Cannabis Sativa Leaf Extract", "Cannabidiol", and "Potassium Hempseedate". In addition, broader search terms such as "Cannabis", "Hemp" and "CBD" were used to cover the broad market.

Cannabidiol is often abbreviated as CBD and will be consistently referred to as such in this survey.

The registration of each individual product in this survey included the following information:

1. Brand
2. Product name
3. Product type
4. Ingredient list with INCI names
5. Indication of claims and description of cannabis-derived ingredients
6. Date of search

Particularly for claims, emphasis was placed on the product descriptions. The written descriptions provided for each product were noted. A distinction was made between claims that specifically focus on the individual cannabis-derived ingredients and claims that highlight the cannabis-derived ingredient along with other ingredients in the product. Additionally, it was recorded whether the product name, brand name, packaging appearance, logos, and other figures or depictions are related to the cannabis plant or its derived ingredients. This helps understand how cannabis-derived ingredients are marketed and presented to the consumer.

2.3.4 Survey of claims

A quantitative market survey was conducted to collect data on cosmetic products with cannabis-derived ingredients. Where cosmetic products with cannabis-derived ingredients were found, the claims made for these products were recorded. This includes claims specifically pertaining to cannabis-derived ingredients as well as claims for cannabis-derived ingredients in combination with other ingredients.

2.4 Terminological Explanation

Terms used in the report

Cosmetic products -

- products that come within the definition of the Cosmetic Regulation(No. 1223/2009)[1]: *Cosmetic products are understood to mean "Any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition or correcting body odours.*"

As further described in the Cosmetic Regulation: "Cosmetic products can include creams, emulsions, lotions, gels, and oils for the skin, face masks […], deodorants […], cleansing products, […], lip balms, […]".

Product type

- refers to the product in relation to its function, e.g., body lotion, facial oil, or lip balm.

Product group

- a categorization of product types with similar functions at a high level, which is used in this report. For example, the product group 'Creams and lotions' includes variants such as body lotion, day cream, hand cream, etc.

[1] https://eur-lex.europa.eu/legal-content/DA/TXT/HTML/?uri=CELEX:02009R1223-20230816&qid=1699971021465

3. Background

3.1 The Cannabis Plant

The plant *Cannabis Sativa* L. (hereinafter referred to as “the cannabis plant”) is a herb with characteristic fan leaves that grows upright and can become up to three metres high (FIGURE 1).

FIGURE 1. The plant *Cannabis sativa* L. often becomes higher than 2.5 metres. The female plants are generally more robust and with distinct formations for seeds. Photo: Bodil E. Pallesen, Danish Technological Institute, AgroTech.

The plant can either be male or female. It belongs to the plant family *Cannabaceae*, which also includes hops and nettle trees. Its botanical classification is still debated, but the most widespread perception is that there is only one species (*Cannabis sativa* L.) with two subspecies (*Cannabis sativa* subsp. *sativa* (hemp) and *Cannabis sativa* subsp. *indica* (marijuana)) (Small & Cronquist, 1976). The subspecies are further grouped into two varieties, depending on whether they possess domesticated or wild characteristics.
Historically, the cannabis plant has been cultivated for millennia, and different parts of the plant have been utilized in various ways. From the stems, fibers have been extracted so they could be used for producing textiles, ropes, and paper. The oily seeds have been used as food and for animal feed. The flowers and extracts from them have historically been used for medicinal purposes. The cannabis plant contains several hundred different active substances, of which the two most studied are tetrahydrocannabinol (THC) and Cannabidiol (CBD). THC has psychoactive properties, while CBD is not psychoactive.
Cannabis plants with less than 0.2 % THC (the hemp variety) are usually grown for industrial purposes, while plants with more than 0.2 % THC (the marijuana variety) are grown for medicinal purposes or as an illegal drug.

3.1.1 The Cannabis Plant Parts

According to CANNUSE[2], a database with more than 2,300 entries regarding the use of the Cannabis plant in different geographical areas and cultures, the most commonly used parts of the plant are the stem, leaves, seeds, and inflorescences.

The hemp stem contains about 25 % fibers that have unique properties such as high cellulose content, high fiber strength, good absorbency, and good insulating properties. They make the fibers suitable for use in a range of industrial products such as textiles, environmentally friendly insulation materials, paper, fiber, and composite materials.

The flowers are used for medicinal and psychoactive use due to the high concentrations of cannabinoids found in the trichomes of the cannabis flowers (Tanney et al., 2021). This is also where terpenes are found in the highest concentration (Tanney et al., 2021). The resin, the sticky collection of trichomes, has historically been used to produce drugs such as hashish.

The leaves from the cannabis plant contain lower levels of cannabinoids, and they also contain large amounts of terpenes as well as flavonoids and sterols.

The seeds of the cannabis plant, also called hemp seeds, are mainly used to produce hemp seed oil, which can be used in food and cosmetics. These seeds have a protein content of 35% and contain several essential amino acids. Similarly, the seeds contain essential fatty acids in a combination of polyunsaturated, monounsaturated, and saturated fatty acids. In addition, the seeds contain a wide range of vitamins, minerals, and antioxidants.

3.1.2 The Cannabis Plant and Its Compounds

The literature documents more than 500 different constituents in the cannabis plant, of which more than 100 are cannabinoids (Bonini et al., 2018; Rock & Parker, 2021). In addition, there are three primary categories of substance classes: terpenes (flavor and fragrance substances), flavonoids (coloring substances), and alkaloids (Andre et al., 2016; Radwan et al., 2021). Besides these substance classes, the cannabis plant also contains a range of other compounds, including fatty acids, proteins, and sugars.

3.1.2.1 Cannabinoids

Cannabinoids are one of the most prominent and well-studied substance classes found in the cannabis plant. These natural chemical compounds have attracted significant attention due to their substantial role in the desired psychoactive and medicinal properties of the cannabis plant. The most well-known cannabinoids include tetrahydrocannabinol (THC), cannabidiol (CBD), and cannabigerol (CBG). THC, which is the primary psychoactive compound in the plant, represents the euphoric effects associated with the plant, but it also has analgesic, muscle-relaxing, antiemetic, and appetite-stimulating effects. CBD has antispasmodic, muscle-relaxing, anxiolytic, neuroprotective effects, and it mitigates the psychoactive effects of THC (Andre et al., 2016; Procaccia et al., 2022; Visković et al., 2023). CBD also has anti-inflammatory and antioxidant properties, making it suitable for products aimed at soothing and caring for the skin. It also appears to have the potential to alleviate skin problems such as eczema and acne. CBG is a precursor to many other cannabinoids, including CBD and THC. CBG is not psychoactive, but like CBD, it has anti-inflammatory properties and can be used in skin care (Perez et al., 2022).

The cannabinoids are synthesized and accumulated in millimetre-sized glandular trichomes (hair cells), which are primarily found on the outside of the plant's female flowers. However, cannabinoids have also been found in low amounts in other parts of the plant (see TABLE 1).

[2] https://cannusedb.csic.es/

TABLE 1. An overview of the average cannabinoid content in different parts of the cannabis plant. The cannabinoid percentages are based on information from Russo & Marcu (2017).

Plant part	Cannabinoid content in %
Trichomes	60
Unfertilized flower	30
Fertilized flower	13
Leaves	0,05
Stem	0,02
Roots	0
Seeds	0

The number of cannabinoids in each individual cannabis plant varies depending on the plant variety and other factors such as age, growing conditions, and harvest time.
Cannabinoids affect the body by interacting with the endocannabinoid system (Zou & Kumar, 2018). This complex regulatory system is present in almost all the body's organs and is involved in regulating the immune system, appetite, stress, pain, and reward. Central to this system are cannabinoid receptors (CB) that have two variants: CB1, which is found in the central nervous system, and CB2, which is primarily found in the immune system. THC triggers its euphoric effect by affecting the CB1 receptors.

3.1.2.2 Terpenes and Terpenoids

Terpenes and terpenoids represent a diverse group of natural compounds in the cannabis plant that play a variety of important roles (Hanuš & Hod, 2020). These compounds not only serve as fragrance, aroma, and flavor substances, but also have protective plant functions. Terpenes are present in various parts of the plant such as the leaves, flowers, and trichomes, and more than 200 different terpenes have been identified in the cannabis plant. The characteristic scent of the cannabis plant is the result of a complex mixture of these volatile substances. By using steam distillation, these molecules can be extracted from the plant material, resulting in an essential oil with a characteristic aroma. Terpenes have been demonstrated to have several potential medicinal properties, including antimicrobial, antioxidant, and anti-inflammatory properties (Hanuš & Hod, 2020). Recent research also indicates that terpenes can work in conjunction with cannabinoids and enhance their activities, giving rise to synergistic effects (Hanuš & Hod, 2020).

3.1.3 The Entourage Effect

A debated observation with the active substances in the cannabis plant is the so-called ”entourage effect”, or synergy effect. The term covers the phenomenon that a greater biological effect is observed if an extract of whole cannabis flowers is given, rather than individual substances in pure form.

3.2 Use of the Cannabis Plant

The cannabis plant can be cultivated with a high yield potential and at the same time, the entire plant can be utilized (FIGURE 2). Seeds and leaves can be used for food and medicinal purposes.

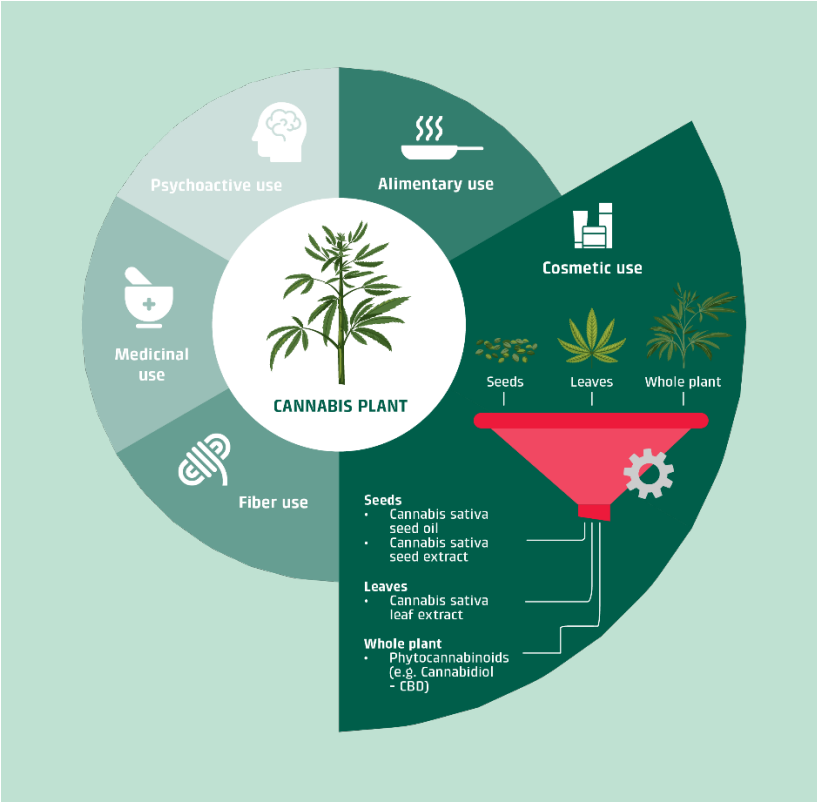

FIGURE 2. Usages of the cannabis plant. The figure has been prepared by the Danish Technological Institute.

In the following, the different applications of the cannabis plant are described.

3.2.1 Fiber Use

The cannabis plant is known to have strong and durable natural fibers. That has made the plant suitable for the production of clothing, coarse canvas, ropes, fishing nets, carpets, and pulp for paper. The robust fibers give textiles a long lifespan and are considered a sustainable alternative to the challenges of the textile industry. Today, hemp fibers are also becoming more and more applicable in sustainable industries such as insulation material for houses, interior panels in the automotive industry, animal bedding, etc.

3.2.2 Medicinal Use

According to the Danish Medicines Agency, medicinal cannabis is currently used as a broad term that includes everything from dried cannabis flowers to cannabis oil, capsules, and oral sprays. However, what they all have in common is that the products contain either parts of the cannabis plant, active substances from the plant, or synthetic cannabinoids, and the products are used to alleviate disease[3]. For example, medical cannabis can be used to alleviate symptoms and treat various medical conditions such as pain, inflammation, nausea, and vomiting associated with chemotherapy and several neurological disorders[4]. According to the Danish Medicines Agency, there are currently two approved drugs based on cannabis in Denmark – namely, the products Sativex ® and Epidyolex ®. Sativex ® is an oral spray used for the treatment of spasticity and neuropathic pain in patients with multiple sclerosis (MS) and in patients with spinal cord injury, as well as against symptoms such as nausea and vomiting after chemotherapy and chronic pain treatment. Epidyolex ® is used to treat certain types of epilepsy.

[3] https://laegemiddelstyrelsen.dk/da/special/medicinsk-cannabis/

[4] https://www.sst.dk/da/udgivelser/2018/rationel-farmakoterapi-1-2018/medicinsk-cannabis

3.2.3 Psychoactive Use

Cannabis is one of the most widespread illegal drugs in Denmark and has sedative effects. Cannabis is a collective term for products from the cannabis plant, and the most well-known forms are hash, pot, skunk, and cannabis oil. THC is the primary psychoactive cannabinoid in cannabis, which gives a euphoric effect.

3.2.4 Alimentary Use

The seeds have a nutty taste and contain essential polyunsaturated fatty acids, minerals, vitamins, and fibers as well as essential amino acids contained in easily digestible proteins. The seeds are primarily pressed into oil, but they are also found in many other preparations, such as hemp flour, hemp milk, and protein seed powder. Although the seeds are the primary plant parts used for food, cannabis sprouts, leaves, and flowers are also used in juice or salads.

3.2.5 Cosmetic Use

The cannabis plant constitutes a source of various ingredients that have gained ground in the cosmetic industry. These ingredients include various extracts and plant parts derived from the cannabis plant. In the following sections, the ingredients identified in the data extraction from the database of the Danish Consumer Council THINK Chemicals are described in more detail.

3.2.5.1 Cannabis Sativa Seed Oil (Hemp Seed Oil)

Cannabis Sativa Seed Oil, known as hemp seed oil in Danish, is extracted from the seeds of the cannabis plant and does not contain THC. Hemp seed oil is rich in essential fatty acids, including omega-3 and omega-6, as well as antioxidants, making the oil a popular choice within the cosmetic industry. Omega-3 is an essential polyunsaturated fatty acid and is widely used as an antioxidant and anti-inflammatory agent in the cosmetic industry. Cannabis Sativa Seed Oil can have a protective effect and reduce dryness due to its high content of polyunsaturated fatty acids (Callaway, 2004; Vaughn et al., 2018).
According to the European CosIng database, Cannabis Sativa Seed Oil has skin conditioning and softening properties[5].
Hemp seed oil is typically extracted from the seeds of the cannabis plant using a process called cold pressing. This method involves pressing the seeds at low temperatures, usually below 40° C, without using heat or chemical solvents. The cold pressing creates minimal heat during the process, which helps to preserve the biologically active substances found in the oil. Unrefined hemp seed oil has a characteristic scent and a dark green color. If the oil is refined, its properties can be altered, and it can obtain a clearer appearance and a less penetrating scent.

3.2.5.2 Cannabidiol (CBD)

In recent years, CBD has attracted attention for its antioxidant and anti-inflammatory properties. Studies have suggested that CBD's anti-inflammatory potential can effectively treat skin inflammatory conditions like acne and psoriasis. Furthermore, Cannabidiol's antioxidant properties have been found to protect the skin from cell damage caused by free radicals (Martins et al., 2022; Atalay et al., 2019).
CBD is also known to have a positive effect on the function of the sebaceous glands by inhibiting the growth of sebocytes and reducing sebum production. The combination of CBD's anti-inflammatory effects and its ability to regulate sebum production makes it a potential agent for controlling oily skin and preventing skin conditions such as acne (Oláh et al., 2014; Baswan et al., 2020).

[5] https://ec.europa.eu/growth/tools-databases/cosing/details/55065

According to CosIng, CBD possesses antioxidant, anti-sebum, skin conditioning, and skin protecting properties[6]. Despite its promising potential, further clinical studies are needed to fully investigate CBD's effectiveness (Baswan et al., 2020). In June 2023, the EU Commission issued a ”Call for data”, a request for safety data concerning the use of pure CBD and cannabis-derived extracts in cosmetic products.
It is important to note that CBD is self-classified in the ECHA (European Chemicals Agency) database of registered substances. There are concerns that it may negatively impact fertility or the unborn child, be harmful if swallowed or inhaled, cause long-term adverse effects on aquatic organisms, and cause harm upon skin contact, including allergic reactions[7]. These self-classifications indicate a need for caution and adequate safety measures when incorporating CBD into cosmetic products.

3.2.5.2.1 Types of Cannabidiol: full-spectrum, broad-spectrum, and isolate

CBD, as a cosmetic ingredient, can appear in three distinct forms: “full-spectrum”, “broad-spectrum”, or “isolate”. While there are no legal or formal scientific definitions for these terms in the context of CBD, there is a general common understanding of them in the industry.
“Full-spectrum” typically refers to extracts or distillates that primarily contain CBD, along with smaller quantities of other cannabinoids such as THC, and CBG. However, the THC content is limited to a maximum of 0.2 %. It is widely recognized that the presence of these minor amounts of endocannabinoids can have a synergistic effect (the entourage effect).
“Broad-spectrum” denotes oil or distillate where THC has been reduced to the lowest practical amount, presumably to comply with varying regulatory requirements across countries.
“Isolate” pertains to the purified crystalline precipitate type of CBD, which is typically high in purity - usually exceeding 99 % pure CBD. This term can refer to an ingredient that is or can be synthetically produced.
In “full-spectrum” and to a large extent in “broad-spectrum”, CBD occurs naturally with other cannabinoids and plant substances such as terpenes, flavonoids, omega fatty acids, amino acids, and vitamins from the plant. In contrast, “isolate” refers to the pure CBD molecule.
CBD can be extracted from the cannabis plant through cold pressing or extraction. There are primarily two different extraction methods - either using ethanol or a CO_2 process. These two methods yield two different products: oil or crystals. Both the oil and the crystals are typically dissolved in a carrier oil such as hemp seed oil. Depending on the plant material and desired purity, the extraction may require several purification steps[8,9].

3.2.5.3 Cannabis Sativa Leaf Extract

Cannabis Sativa Leaf Extract, derived from the leaves of the cannabis plant, is typically dissolved in a carrier oil, like hemp seed oil. According to CosIng, this extract has skin conditioning and softening properties[10].
Cannabis Sativa Leaf Extract is produced by using various solvents and processes. Desired substances are extracted from the leaves using primarily CO_2 and ethanol. Following the extraction, the solvents are removed, leaving behind the extracted substances. They may include plant waxes, lipids, terpenes, and other plant components such as chlorophyll.

3.2.5.4 Cannabis Sativa Seed Extract

Cannabis Sativa Seed Extract is an ingredient extracted from the seeds of the cannabis plant. This extract contains a range of natural compounds and nutrients that can be used in various

[6] https://ec.europa.eu/growth/tools-databases/cosing/details/96287

[7] https://echa.europa.eu/da/substance-information/-/substanceinfo/100.215.986

[8] https://www.labtechsrl.com/docs/Cannabis%20Extraction%20Methods.pdf

[9] https://www.julabo.com/en/applications/industries-and-markets/cannabis-extraction#a3824

[10] https://ec.europa.eu/growth/tools-databases/cosing/details/97599

ways, including in cosmetic products. According to CosIng, this extract has skin conditioning and softening properties[11].

3.2.5.5 Potassium Hempseedate

Potassium Hempseedate is the product of a chemical reaction between potassium hydroxide and hemp seed oil. In this process, known as saponification, potassium hydroxide converts the fatty acids in hemp seed oil into soap molecules, a common procedure in the production of soaps and various cosmetic products.
According to CosIng, Potassium Hempseedate exhibits cleansing properties and therefore it can be used as a mild detergent in cosmetic products[12].

3.3 Claims

Claims about cosmetic products are intended to inform consumers about the product's properties and functions, enabling them to make informed choices. It is prohibited to market cosmetic products in a manner that ascribes them properties or functions they do not possess, as stipulated in Article 20, paragraph 1, of the EU Cosmetics Regulation.
CosIng suggests various functions that cannabis-derived ingredients might have in cosmetic products, based on their use in the cosmetic industry (TABLE 2).

TABLE 2. Functions of cannabis-derived ingredients as indicated by CosIng.

Cannabidiol (CBD)	ANTIOXIDANT ANTI-SEBUM SKIN CONDITIONING SKIN PROTECTING
Cannabis Sativa Seed Oil	SKIN CONDITIONING - EMOLLIENT
Cannabis Sativa Seed Extract	SKIN CONDITIONING - EMOLLIENT
Cannabis Sativa Leaf Extract	SKIN CONDITIONING - EMOLLIENT
Potassium Hempseedate	SURFACTANT - CLEANSING

ANTIOXIDANT
This term refers to substances in skincare that help shield the skin against damage caused by free radicals and environmental factors.

ANTI-SEBUM
This term refers to skincare ingredients designed to reduce excess sebum production in the skin. These ingredients can help manage oily skin and reduce the risk of clogged pores and acne breakouts.

SKIN CONDITIONING
In this context, “skin conditioning” refers to improving the condition of the skin. It refers to ingredients aimed at preserving, improving, and caring for the overall health and appearance of the skin. Examples of this can be skin care products like moisturizers and serums that hydrate the skin.

SKIN PROTECTING
This term refers to products designed to shield the skin from harmful influences, such as sun damage, pollution, or other environmental factors that detrimentally can impact the skin´s health and appearance. Products such as sunscreens and moisturizers with barrier properties can help protect the skin.

[11] https://ec.europa.eu/growth/tools-databases/cosing/details/83414

[12] https://ec.europa.eu/growth/tools-databases/cosing/details/59124

SKIN CONDITIONING – EMOLLIENT

In this context, “skin conditioning” refers to the improvement of the skin´s condition, and “emollient” is used to describe the process of making the skin smooth and moisturized. Emollients are ingredients that are used in skincare products to enhance the skin's smoothness and moisture content. Therefore, they are used to condition and soften the skin.

SURFACTANT – CLEANSING

In the context of skincare, ingredients possessing surfactant properties are frequently incorporated into products such as facial cleansers and body washes. These compounds function to eliminate dirt, oil, and impurities from the skin. They do this by breaking down these substances, facilitating their easy removal upon rinsing.

3.4 Legislation

The use of cannabis-derived ingredients in cosmetic products is governed by the EU Cosmetics Regulation, the principal legislative framework for cosmetics. All cosmetic products marketed within the EU are required to adhere to this regulation - European Parliament and Council Regulation (EC) No. 1223/2009 of 30 November 2009 on cosmetic products[13].

Article 14, paragraph 1, letter a) of the Cosmetics Regulation stipulates that the inclusion of certain substances in cosmetic products is prohibited. These substances are enumerated in Annex II, also referred to as the prohibition list [14]. As per Annex II, entry number 306 in the Cosmetics Regulation, it is stated: *“Narcotics, natural and synthetic: All substances listed in Tables I and II of the single Convention on narcotic drugs (Treaty Series No 34 (1965) (amended 2631)); signed in New York on 30 March 1961*”.

This implies that all substances listed in Tables I and II of the UN Single Convention “The Single Convention on Narcotic Drugs” from 1961 are banned from use in cosmetic products[15].

According to the pertinent UN Single Convention, the term “cannabis” is defined as follows:

“Cannabis”: the flowering or fruiting tops of the cannabis plant (excluding seeds and leaves not accompanied by the tops), from which the resin has not been extracted, regardless of their designation.

“Cannabis plant”: any plant of the genus *Cannabis.*

“Cannabis resin”: the resin, whether in its raw or purified form that is obtained from the cannabis plant.

Therefore, the use of the before mentioned parts of the cannabis plant in cosmetic products is prohibited. This includes the flowering or fruiting tops of the cannabis plant (from which the resin has not been extracted) as ingredients in cosmetic products. Until November 2020, the extraction of CBD was only permitted from the seeds and leaves of the cannabis plant. This posed a challenge, as these parts contain a relatively low amount of CBD (see TABLE 1). The flower of the cannabis plant contains the highest concentration of CBD. In November 2020, the EU Court of Justice decreed that CBD extracted from all parts of the cannabis plant cannot be prohibited in any EU member states, as it is not classified as a narcotic[16]. This ruling applies even when CBD is extracted from the entire cannabis plant, not just its stems and seeds, provided that the THC content does not exceed 0.2 %.

In response to concerns raised by EU member states and civil organizations regarding the use of CBD in cosmetic products and potential health risks due to insufficient hazard data on the substance, the EU Commission has requested a safety assessment from the EU's Scientific

[13] https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:02009R1223-20230816&qid=1698845951029

[14] https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:02009R1223-20221217&qid=1692964010906

[15] https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:02009R1223-20230816

[16] Sag C-663/18: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:62018CA0663

Committee on Consumer Safety (SCCS). This safety assessment will primarily concentrate on the safety of CBD in cosmetic products and the permissible trace levels of THC originating from the cannabis plant.
On June 1, 2023, the EU Commission initiated a data collection (“call for data”) concerning the safety of CBD in cosmetic products. This call encompasses data not only on the safety of pure CBD but also on extracts that may contain trace levels of other cannabinoids, including THC. The data gathered will be utilized to formulate a mandate for the SCCS to draft an opinion on the safe use of this ingredient in cosmetic products.
In principle, Danish law aligns with EU law, as CBD is not considered a euphoric substance under Danish law if its THC content does not exceed 0.2 %, as per Executive Order on Euphoric Substances, § 1, paragraph 3, no. 7.

4. Investigation of the occurrence of cannabis-derived ingredients in cosmetic products

4.1 Database search

A search was carried out in CosIng, using the keyword fragment “CANNA*” to encompass all cannabis-derived ingredients as per the definition of the database.
TABLE 3 showcases the results of this search, identifying 49 cannabis-derived ingredients. These ingredients are classified into two categories: Ingredients that are permitted in cosmetics (37 pcs.), and ingredients that are prohibited under Annex II of the Cosmetics Regulation (12 pcs.).

TABLE 3. Cannabis-derived ingredients registered in CosIng. Overview of the resulting cannabis-derived ingredients from the search for "CANNA*".

Permitted cannabis-derived ingredients	Permitted cannabis-derived ingredients	Prohibited cannabis-derived ingredients
Cannabis Sativa Seed Oil	Cannabidiol (CBD) – derived from extract or tincture or resin of cannabis	Cannabis Sativa Flower/Leaf/Stem Extract
Cannabis Sativa Seed Extract	Cannabidiol (CBD) - synthetically produced	Cannabis Sativa Flower Extract
Cannabis Sativa Seed Water	Cannabigerol (CBG)	Cannabis Sativa Flower/Leaf Extract
Hydrogenated Cannabis Sativa Seed Oil	Cannabidiol Trisiloxane	Cannabis Sativa Flower/Leaf/Stem Oil
Hydrolyzed Cannabis Sativa Seed Extract	Cannabisamidopropyl Dimethylamine	Cannabis Sativa Flower/Leaf/Stem Water
Cannabis Sativa Seed Oil peg-8 esters	Cannabisamidopropyl Hydroxysultaine	Cannabis Sativa Leaf/Stem Water
Cannabis Sativa Seed Oil glycereth-8 esters	Capryl Cannabis Seedate	Cannabis Sativa Seed/Stem Oil
Cannabis Sativa Seed Oil Ethyl Glycinate Amides	Ethyl Cannabis Seedate	Cannabis Sativa Stem Extract
Cannabis Seed Oil Dimer Dilinoleyl Esters/ Dimer Dilinoleate Copolymer	Behenyl Cannabis Seedate	Cannabis Sativa Stem Powder
Cannabis Sativa Seed Oleosomes	Isostearyl Cannabis Seedate	Cannabis Sativa Extract
Cannabis Sativa Seedcake	Stearyl Cannabis Seedate	Cannabinoids
Cannabis Sativa Seedcake Powder	Hydrogenated Hemp Seed Oil	Cannabinol (CBN)
Cannabis Sativa Leaf Extract	Hydrolyzed Hemp Seed Extract	
Cannabis Sativa Root Extract	Decyl Hempseedate	
Cannabis Sativa Callus Lysate	Poly(Dimer Hempseed Oil)	
Cannabis Sativa Callus Extract	Cannabisamidopropyl Hydroxysultaine	
	Potassium Hempseedate	
	Polyglyceryl-4 Hemp Seedate	
	Polyglyceryl-4 Polycastorate/Hempseedate	

Permitted cannabis-derived ingredients	Permitted cannabis-derived ingredients	Prohibited cannabis-derived ingredients
Cannabis Sativa Callus Culture Lysate Extract		
Cannabis Sativa Sprout Extract		
Cannabis Sativa Sprout		
Cannabis Sativa Sprout Extract		

The majority of the cannabis-derived ingredients in TABLE 3 are extracts from various parts of the cannabis plant. However, the list also includes isolates of individual active substances, such as CBD, which can be produced synthetically or derived from the cannabis plant.

4.2 Data extraction from the database of the Danish Consumer Council THINK Chemicals, underlying the app called *Kemiluppen*

As part of the investigation of cannabis-derived ingredients in cosmetic products, data was extracted from the database of the Danish Consumer Council THINK Chemicals, underlying the app *Kemiluppen*. This application, designed for consumers of cosmetics and personal care products, provides information about chemicals in over 30,000 consumer products. The data extraction facilitated the analysis of these products, enabling the identification and evaluation of the use and prevalence of cannabis-derived ingredients in cosmetic products.
Product ingredients are generally registered in the Kemiluppen database only after the product has been scanned more than ten times with the Kemiluppen app. In contrast, products scanned fewer than ten times are usually not included. As a result, the database primarily represents products with a certain level of prevalence and generally does not contain information about niche-oriented or rare products.
Based on the 37 permitted cannabis-derived ingredients identified in CosIng, a data extraction was conducted from the database of the Danish Consumer Council THINK Chemicals. Of the more than 30,000 cosmetics and personal care products examined, 138 products contained one or more cannabis-derived ingredients. This corresponds to approximately 0.5 % of the products in the database (TABLE 4).

TABLE 4. Overview of identified cannabis-derived ingredients and their occurrence in the data extraction from the database of the Danish Consumer Council THINK Chemicals, underlying the app called *Kemiluppen,* along with the percentage of the product total.

Cannabis-derived ingredient	Current products
Cannabis Sativa Seed Oil	124 (0,4 %)
Cannabis Sativa Seed Extract	24 (0,08 %)
Cannabidiol (CBD)	13 (0,04 %)
Cannabis Sativa Leaf Extract	4 (0,01 %)
Potassium Hempseedate	3 (0,01 %)

As illustrated in TABLE 4, 5 out of the permitted 37 cannabis-derived ingredients are found in cosmetic products registered in *Kemiluppen*. This suggests that the presence of cannabis-derived ingredients in cosmetic products is concentrated around few representative ingredients. Among these, Cannabis Sativa Seed Oil (hemp seed oil) is the most prevalent, appearing in 124 out of the 138 (90 %) identified products containing cannabis-derived ingredients.

This indicates that certain cannabis-derived ingredients are more prevalent and extensively used in cosmetic products, whereas others are less common or more specialized.
Among these five ingredients, Cannabis Sativa Seed Oil is the most frequently used, followed by Cannabis Sativa Seed Extract, CBD, Cannabis Sativa Leaf Extract, and Potassium Hempseedate. These five ingredients also rank among the most common cannabis-derived ingredients according to the survey, which will be presented in section 5.
CBD was synthetically produced in 10 out of 13 cosmetic products, whereas it was naturally derived in 3 out of 13 products.
Cannabis-derived ingredients were incorporated into various product categories, including facial care, hair care, body care, makeup, sun care, baby care, and soap/hygiene.
Among these, facial care stood out as the category where cannabis-derived ingredients were most prevalent (40 %), followed by hair care (21 %), body care (17 %), soap/hygiene (14 %), makeup (4 %), baby care (3%) and sun care (1 %).
Among the 138 identified cosmetic products containing cannabis-derived ingredients, 23 were manufactured in Denmark, constituting 17 % of the total count. These products originated from seven Danish brands. Additionally, two Danish brands had cosmetic products containing cannabis-derived ingredients, though these products were not manufactured in Denmark.
However, it should be noted that the consumer products registered in *Kemiluppen* primarily represent cosmetic products with a certain prevalence among Danish consumers. Therefore, it is likely that products from more specialized retailers and manufacturers of cosmetic products with cannabis-derived ingredients are not included in the database. Hence, the above information does not necessarily provide a true representation of more specialized retailers and products.

5. Survey of the market for cosmetic products containing cannabis-derived ingredients

In the report, the market for cosmetic products containing cannabis-derived ingredients was surveyed to gather information in the area. The survey encompassed the following aspects:

- Identification of brands and product types containing cannabis-derived ingredients.
- Identification of typical cannabis-derived ingredients used in the products.
- Compilation of various claims associated with the use of cannabis-derived ingredients.

As an integral aspect of the survey of cosmetic products containing cannabis-derived ingredients, several visits were conducted across online stores and online platforms between September 7th to September 22nd, 2023. The primary objective was to discern and identify the range of cosmetic products incorporating cannabis-derived ingredients. Furthermore, data extracts from the database of the Danish Consumer Council THINK Chemicals, underlying the app *Kemiluppen*, along with insight gathered from interviews with industry stakeholders, have been incorporated into the findings.

During the search on the 15 online stores and online platforms, a total of 267 cosmetic products featuring cannabis-derived ingredients were registered. Among these, 148 were unique, suggesting that some products appeared multiple times across different platforms.

5.1 Product types

This section presents the results of the survey, detailing the registration of cosmetic products and brands advertised as containing cannabis-derived ingredients.

Between September 7th and September 22nd, 2023, a total of 267 product registrations were documented across 15 online stores and online platforms. Among these, 148 products were identified as unique, and the same product could thus in several cases be found on several online stores and online platforms. Following registration, these cosmetic products were categorized, grouping similar product types into a general product classification, detailed in TABLE 5 below.

TABLE 5. Specification of the grouping of products registered across the visited online stores and online platforms, along with the count of registered products in each product category.

Product group	Product type	Number of registered products	Number of unique products
		267	**148**
Creams and Lotions Total		**113**	**56**
	Facial cream	34	13
	Serum	24	13
	Body lotion	14	7
	Hand cream	11	5
	Cream	15	5
	Foot cream	4	4
	Night cream	4	3

Product group	Product type	Number of registered products	Number of unique products
	Eye serum	2	1
	Body cream	2	2
	Eye cream	1	1
	Aftersun	1	1
	Gel cream	1	1
Oils Total		**74**	**38**
	Oil	45	28
	Facial oil	29	10
Others Total		**14**	**12**
	Facial mask	9	7
	Foot mask	1	1
	Eye mask	1	1
	Facial gel	1	1
	Self-tanning spray	1	1
	Cream bar	1	1
Ointments Total		**15**	**11**
	Ointment	8	6
	Balm	4	3
	Zink ointment	2	1
	Body butter	1	1
Cleansers Total		**12**	**9**
	Cleansing milk	2	1
	Facial scrub	3	2
	Body scrub	1	1
	Foot scrub	1	1
	Cleanser	1	1
	Cleansing foam	1	1
	Cleansing gel	2	1
	Hand scrub	1	1
Lip balms Total		**8**	**7**
	Lip balm	8	7
Shower gels Total		**10**	**6**
	Shower gel	10	6
Soap Total		**6**	**5**
	Bar soap	3	3
	Hand soap	1	1
	Soap	2	1
Deodorants Total		**6**	**3**
	Deodorant	6	3
Makeup Total		**1**	**1**
	Foundation	1	1
Gift box		8	n/a

TABLE 5 illustrates that the 148 unique cosmetic products containing cannabis-derived ingredients were distributed across 40 distinct product types. More than half of these product types (21 pcs.) consisted of only one unique product, such as aftersun, foot scrub, or cleansing foam. The most prevalent product types were oil, face cream, serum, and face oil. The data presented in TABLE 5 serves as the foundation for the visualization depicted in FIGURE 3, showcasing the proportion of unique products within each product group.

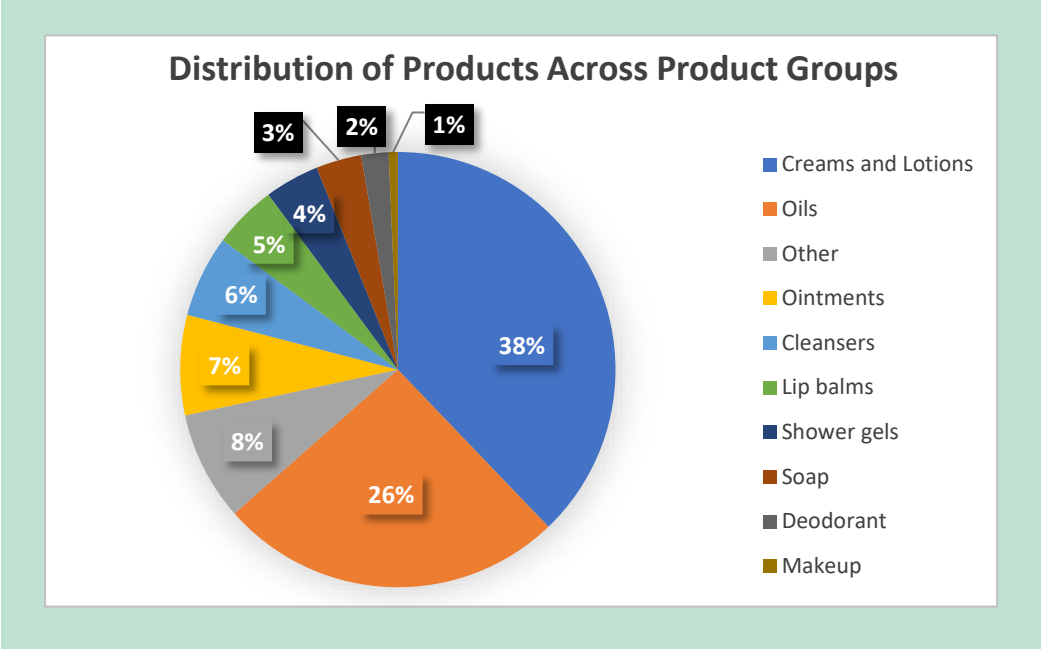

FIGURE 3. Visualization depicting the proportion of unique cosmetic products containing cannabis-derived ingredients within each product group registered across online stores and online platforms, totaling 148 unique products.

Creams and lotions constitute the largest product group (38 %) among cosmetic products featuring cannabis-derived ingredients, followed by oils, accounting for 26 % of the product range. Furthermore, lip balms, cleansing products, ointments, and the category labeled “Other” each represent shares ranging from 5-8 %. Remaining product groups contribute to less than 5 % each.

The analysis of visits to online stores and online platforms revealed that a wide range of product types are represented among cosmetic products with cannabis-derived ingredients. Notably, the product group of creams and lotions constitutes a significantly larger proportion compared to other product groups. Conversely, it was observed that certain cosmetic product types, such as makeup, deodorant, soap, and shower gel, constitute a minor segment of the market for cosmetic products with cannabis-derived ingredients.

In the context of cosmetic products containing cannabis-derived ingredients, it was observed that 124 of the registered products, constituting 84 %, come within the facial care category. This observation is consistent with industry information indicating that cannabis-derived ingredients typically are more expensive than other ingredients. This makes them particularly suitable for facial care products, which in general are sold in smaller volumes.

5.2 Brands

During the visits to online stores and online platforms as part of the survey, 59 distinct brands were identified, each offering at least one cosmetic product with cannabis-derived ingredients. Out of these 59 brands, 17 were Danish, accounting for 29 % of the total. These Danish brands represented 78 out of the 148 different cosmetic products with cannabis-derived ingredients, meaning that 53 % of the registered cosmetic products with cannabis-derived

ingredients were Danish. However, only six out of these 17 Danish brands were produced in Denmark. As a result, Danish-produced cosmetic products with cannabis-derived ingredients only accounted for 23 out of the 148 different registered products, which is 16 % of the total amount.
This implies that approximately two-thirds of the Danish cosmetic products with cannabis-derived ingredients were produced in other countries, such as Italy and Greece.
For approximately two-thirds of all brands, only one product with cannabis-derived ingredients was registered (TABLE 6).

TABLE 6. Number of registered products per brand.

Number of brands registered in the survey	Number of registered products per brand
40	1 product
13	2-5 products
5	6-9 products
1	>10 products

TABLE 6 demonstrates that a limited number of products were registered for a majority of the brands (for 90 % of the brands, between 1 and 5 products were registered). The brand with most registered products had 24 unique cosmetic products with cannabis-derived ingredients, accounting for 16 % of the registered products in this survey. This was an exception, as for most brands (40 out of 59, corresponding to 68%) only one product was registered.
Among brands with more than 5 registered products, Danish brands were the most frequently represented (4 out of 6 brands).
Brands that specifically concentrate on cosmetic products with cannabis-derived ingredients seem to have the most extensive selection of such products. These brands often have associated online stores carrying the same name as the brand. When visiting the online stores, it was observed that all products in their range contained cannabis-derived ingredients. In contrast, larger retail chains and department stores had a relatively small proportion of cosmetic products that contained cannabis-derived ingredients. Based on the observations from the survey and industry statements, it appears that these specialty stores place a greater emphasis on cosmetic products with cannabis-derived ingredients. This suggests that cosmetic products with cannabis-derived ingredients represent a niche market.

5.3 Cannabis-derived ingredients in cosmetic products

TABLE 7 provides an overview of the registered cannabis-derived ingredients identified during the survey, as well as their prevalence in the registered products.

TABLE 7. Compilation of the occurrence of cannabis-derived ingredients in the cosmetic products registered during online store visits. The cannabis-derived ingredients that were identified in the Consumer Council THINK Chemicals database are marked with *; the remainder were only found in the current survey.

Cannabis-derived Ingredient	Actual Products (percentage share)
Cannabis Sativa Seed Oil	119 (80 %)
Cannabidiol (CBD)	65 (44 %)
Cannabis Sativa Leaf Extract	16 (11 %)
Cannabis Sativa Seed Extract	11 (7 %)
Potassium Hempseedate	1 (0.7 %)
Other registered cannabis-derived ingredients	
Cannabis Sativa Herb Oil	1 (0.7 %)
Cannabis Sativa Oil	1 (0.7 %)

Cannabis-derived Ingredient	Actual Products (percentage share)
Cannabis Sativa Extract	1 (0.7 %)
Cannabis Sativa Stem Extract	1 (0.7 %)
Cannabis Sativa Leaf/Seed Powder	1 (0.7 %)

Multiple cannabis-derived ingredients could be present in the same cosmetic product.
Out of the 148 unique products registered in the survey, Cannabis Sativa Seed Oil was found in 124 (84 %), making it the most commonly used cannabis-derived ingredient in the identified cosmetic products. CBD was found in 65 products (44 %), followed by Cannabis Sativa Leaf Extract (11 %) and Cannabis Sativa Seed Extract (7 %). Potassium Hempseedate was found in one product. Additionally, five other cannabis-derived ingredients were found in one product (TABLE 7). Among these, two ingredients: Cannabis Sativa Extract and Cannabis Sativa Stem Extract are not permitted for use in cosmetic products. Additionally, three ingredients were not found in the CosIng database, namely Cannabis Sativa Oil, Cannabis Sativa Herb Oil, and Cannabis Sativa Leaf/Seed Powder. It was noted that the brand behind the single product registered with the ingredient Cannabis Sativa Leaf/Stem Powder claims to be the only brand in the world that uses this ingredient.
Out of the 65 registered products with CBD, 44 (68 %) provided information about the quantity of added CBD, most often indicated in milligrams on the front of the product. When the amounts of added CBD are converted to percent, the quantities of added CBD range from 0.08 % to 30 %.
Among the 65 registered products containing CBD, only four products (all from the same brand) contained synthetically produced CBD. Products from this brand are also the only Danish-produced cosmetic products containing CBD.
On one of the products, it was indicated that the CBD was "Full-Spectrum Hemp CBD".
No products specified that the CBD was broad-spectrum CBD. Seventeen products, sixteen of which came from the same Danish brand, were described as containing CBD isolate. These sixteen products also contained CBD extract.
It was observed that terms such as "full-spectrum" and "broad-spectrum" are not commonly used in relation to the cosmetic products registered in this survey.

5.4 Common claims found in cosmetic products containing cannabis-derived ingredients

Claims act as marketing tools for cosmetic products. In this section, we will analyse the use of claims among the 148 identified products featuring cannabis-derived ingredients.
The terminology box below clarifies the concepts and definitions of terms used within this section.

Terminology – claims

Claim:
The claims associated with cosmetic products intend to communicate the product's attributes and functionalities, enabling the end user to make an informed decision.

The claim "With/Contains":
- a hypothetical example could be "*enriched with hemp seed oil from Ireland.*"

Ingredient-related claims:
- a hypothetical example could be *"with CBD that reduces stress and redness and provides plenty of moisture."*

Claims regarding a group of ingredients:
- a hypothetical example might be "*enriched with hemp seed oil and vitamin C that provide care and nourishment for the skin."*

Performance claims:
These are claims relating to product efficacy. An example is "*this body lotion is moisturizing."* Performance claims are not part of this survey.

TABLE 8 provides a compilation of the types of claims used for the 148 products.

TABLE 8. Types of claims on the 148 registered products.

Type of claim	Number of registered products
With/Contains	47
Ingredient	45
Group of ingredients	28
None	15
Unclear	13

The claim form "unclear" implies that it is not explicitly stated what the product claims to offer. This can potentially confuse the consumer.

- **Lack of specification of ingredients/confusion between ingredients:** An example is "*contains pure crystallized CBD isolate and powerful probiotics that act anti-inflammatory on the skin and reduce cellular damage while increasing the skin's collagen production for a more full, smooth and radiant skin"*. In this case, it is unclear whether CBD isolate as well as probiotics are being claimed, or if the claim pertains to probiotics only.
- **Lack of clarity about use:** In some cases, the meaning of the claim is unclear. For instance, the statement "*hemp is known to have cosmetic properties"* is quite vague and does not give the consumer sufficient information.
- **Lack of precise information:** Uncertainty can also stem from incorrect or insufficient details in the claim. For instance, statements like "*the cream has a high content of fatty acids from CBD"*, or *"this rich lotion contains hemp seed oil, which does not smear."* These statements do not give the consumer enough information to understand what they can expect from the product.

45 products demonstrated cannabis-derived ingredients, and they were claimed at ingredient level. TABLE 9 shows examples of how the ingredients were claimed.

TABLE 9. Overview of observed ingredient-level claims in the survey.

Claim	Cannabidiol (CBD)	Cannabis Sativa Seed Oil	Cannabis Sativa Seed Extract	Cannabis Sativa Leaf Extract	Potassium Hempseedate
Total	**48**	**46**	**6**	**0**	**0**
Moisturizing	6	11	1	0	0

Claim	Cannabidiol (CBD)	Cannabis Sativa Seed Oil	Cannabis Sativa Seed Extract	Cannabis Sativa Leaf Extract	Potassium Hempseedate
Moisture retaining	0	2	2	0	0
Softening	1	3	0	0	0
Nurturing[17]	1	2	0	0	0
Balances the skin	2	1	0	0	0
Anti-age	6	5	0	0	0
Stimulates cell renewal	2	3	0	0	0
Regenerating / Healing	7	1	0	0	0
Smoothness / Elasticity	1	2	0	0	0
Anti-inflammatory	2	3	2	0	0
Soothing / Reduce stress and redness	7	4	0	0	0
Antioxidant	3	2	0	0	0
Fights impurities / Anti-acne	4	0	0	0	0
Sebum-regulating	3	1	0	0	0
Firming	2	3	0	0	0
Nourishing[Fejl! Bogmærke er ikke defineret.]	1	3	1	0	0

TABLE 9 reveals that CBD and Cannabis Sativa Seed Oil (hemp seed oil) have the highest number of claims at ingredient level, with 48 and 46 claims, respectively, in this survey. Cannabis Sativa Seed Extract has received six claims, whereas Cannabis Sativa Leaf Extract and Potassium Hempseedate have received no claims at ingredient level. For Cannabis Sativa Seed Oil (hemp seed oil), the most common claims were ”moisturizing” and ”anti-age”, whereas the most common claims for CBD were ”regenerating/healing”, ”moisturizing” and ”anti-age”.

In addition to the claims shown in TABLE 9, the following claims were also observed: *“refreshing”*, “*strengthening”*, “*soothing”*, “*relieving muscle fatigue”*, “*gives the skin glow”*, *“positive effect on wounds”*, *“cell-communicating”*, *“anti-irritant”*, *“healthier radiance”*, *“activates the skin's own endocannabinoid system”*.

One product was claimed to contain “*CBD – extract from cannabis resin”,* which is not permitted in cosmetic products.

15 of the 148 registered products had no claims on cannabis-derived ingredients; instead, a cannabis-related term such as ”CBD” or ”hemp” was part of the product name. It can be inferred that the cannabis-related name served as a claim in itself, similar to the 47 products that were marketed by stating that the product contained a specific cannabis-derived ingredient.

Out of 148 products, 76 (51 %) marketed themselves with illustrations of the cannabis plant on the product packaging. Examples of such claims include an image or illustration of the cannabis plant's characteristic fan leaves on the product packaging.

[17] "Nurturing" and "Nourishing" are two related terms often used within the cosmetic industry, but they have different nuances in their meaning. "Nurturing" usually refers to products aimed at maintaining and improving the overall health and appearance of the skin. "Nourishing" typically refers to products that provide nutrients to the skin, such as antioxidants, essential fatty acids, and vitamins.

5.5 Observations in the survey and interviews

From the interviews, the following observations and attitudes were identified.

Cannabis Sativa Seed Oil (Hemp seed oil) and Cannabidiol (CBD)

- A distinction was made between the two most commonly used cannabis-derived ingredients: Cannabis Sativa Seed Oil and CBD.
- Cannabis Sativa Seed Oil was considered comparable to other vegetable oils, with properties such as moisturizing, and being rich in antioxidants and vitamins.
- One interviewee indicated that customers requested this oil solely because of the term “cannabis” in the name.
- Regarding the ingredient CBD, the cosmetic industry was generally in a waiting position, primarily due to the lack of documentation of effects on the skin and the absence of a safety assessment.

Use of cannabis-derived ingredients in cosmetic products

- Out of the seven Danish manufacturers contacted, four responded that they do not produce cosmetic products with cannabis-derived ingredients.
- Three manufacturers do use cannabis-derived ingredients, but only to a very limited extent.
- Only one Danish manufacturer used CBD in cosmetic products, but they ceased to produce these products during the same period as this report was prepared.

Considerations regarding the use of CBD in products

- Some manufacturers are waiting for a future safety assessment of CBD.
- One manufacturer pointed out that they were unable to obtain a safety report prepared for products containing CBD.
- The manufacturer of a Danish brand decided to discontinue the use of CBD in their products in the future. This decision was partly due to plans for export expansion to countries that do not permit the use of CBD in cosmetic products. Another contributing factor was criticism from consumers regarding the use of CBD, attributed to the lack of documentation of its safety on the skin.

Overall, these observations indicate a general sense of caution among the surveyed parties in the Danish cosmetic industry regarding the use of CBD.

6. Conclusion

This report has surveyed the market for cosmetic products with cannabis-derived ingredients in Denmark and Europe using interviews, data extraction, and online store visits.
Through the EU database CosIng, 37 permitted cannabis-derived ingredients in cosmetic products were identified. Additionally, a data extraction was conducted from the database of the Danish Consumer Council THINK Chemicals, which contains information about chemicals in over 30,000 consumer products. In this database, the following five cannabis-derived ingredients were found in cosmetic products marketed in Denmark: Cannabis Sativa Seed Oil, Cannabidiol, Cannabis Sativa Seed Extract, Cannabis Sativa Leaf Extract, and Potassium Hempseedate.
Furthermore, cannabis-derived ingredients were investigated by visiting 15 online stores and online platforms. In total, 267 product registrations were made, of which 148 were unique products. The majority of these (84 %) were categorized as facial care.
A total of 59 registered brands offering cosmetic products with cannabis-derived ingredients were identified. Of these brands 17 were Danish, but only six of them were produced in Denmark.
Among the 148 unique products registered in the survey, Cannabis Sativa Seed Oil was the most frequently used cannabis-derived ingredient, appearing in 84 % of the products. CBD was found in 44 % of the products, whereas Cannabis Sativa Leaf Extract and Cannabis Sativa Seed Extract were found in 11 % and 7 % of the products.
Among the 148 identified products, Cannabis Sativa Seed Oil and CBD were most frequently marketed at ingredient level with 48 and 46 claims, respectively. The most common claims for these ingredients were “moisturizing”, “anti-age” and “soothing/reduces stress and redness”. Unclear claims were also observed, where the meaning of the claims was unclear.
Additionally, 15 out of 148 products did not make specific claims about cannabis-derived ingredients but used cannabis-related terms such as “CBD” or “hemp” in the product name. This suggests that the cannabis-related name itself can serve as a type of claim. Similarly, over half of the products (51 %) featured illustrations of the cannabis plant's fan leaves on the product packaging as part of the marketing.
In 2020, the EU permitted the use of CBD derived from any part of the cannabis plant, and cosmetic products containing CBD are now available on the market. However, a certain level of caution persists in the industry, primarily due to the lack of documentation of the ingredient's effects on the skin and the absence of a safety assessment for the ingredient.

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Survey of cannabis-derived ingredients in cosmetic products

The purpose of this report was to examine the market for cosmetic products containing cannabis-derived ingredients. The project was limited to examining skincare products, including leave-on and rinse-off products. The methodology involved conducting a market survey using data from the database of the Danish Consumer Council THINK Chemicals, visiting online stores and online platforms, and interviewing relevant industry stakeholders.

This report identified ten different cannabis-derived ingredients across 148 cosmetic products that were distributed on 40 different product types and were represented by 59 brands. Cannabis Sativa Seed Oil was the most frequently used cannabis-derived ingredient, appearing in 84 % of the products. CBD was found in 44 % of the products, followed by Cannabis Sativa Leaf Extract (11 %) and Cannabis Sativa Seed Extract (7 %). Potassium Hempseedate was found in one product.

Creams and lotions constituted the largest product group followed by oils. The majority of the registered products were facial care. It appears that cosmetic product with cannabis-derived ingredients is a niche market. The majority of the products examined were produced abroad.

For Cannabis Sativa Seed Oil, the most common claims were “moisturizing” and “anti-age”, while the most common claims for CBD were “regenerating/healing”, “moisturizing” and “anti-age”.

The EU Commission has made a call for safety data on the use of pure CBD and cannabis-derived extracts in cosmetic products. In general, the findings indicated widespread caution regarding the use of CBD among the surveyed Danish manufacturers, since the industry awaits a safety assessment.

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