



Union for
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A review of patent activity in the cosmetics sector in the context of the ethical sourcing of biodiversity

Information note 1 of 4

*Trends in patent activity in the
cosmetics and perfume sectors*

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Introduction

Continuing innovation is a feature of the cosmetics and perfumes sector. Increasingly, companies seek to protect such innovations through patents, which are becoming central to their research and development, commercialization and marketing strategies - particularly in relation to natural ingredients. At the same time, increasing patent protection for natural ingredients adds to the need for these companies to consider the link and potential impact of patent policies and practices on the conservation, sustainable use and equitable sharing of benefits derived from biodiversity.

This information note on “Trends in patent activity in the cosmetics and perfume sector” is the first in a series reviewing patent activity in the cosmetics sector in the context of the requirements of the ethical sourcing of biodiversity and the Convention on Biological Diversity (CBD), and provides data and analysis on the following issues:

- Growing importance of patents to cosmetics companies over the last 20 years,
- Relative significance of patent activity in relation to natural ingredients, particularly those derived from plants,
- Countries where patents are being sought and main companies engaged in patent activity, and
- Initial questions raised by this information on the manner in which the cosmetics sector considers and advances the objectives of the CBD, including on prior informed consent and equitable sharing of benefits.

A review of patent activity in the cosmetics sector

Biodiversity is recognized as a source of innovation in the cosmetics sector. Yet how is it addressed in the context of increasingly active patenting strategies? Looking at how companies seek and exploit intellectual property protection in relation to natural ingredients is important in light of the complex and often controversial relationship between patents and biodiversity.

Legal and policy measures are currently being considered at the international, regional and national levels to address these concerns. A growing number of companies engaged with the ethical sourcing of biodiversity are also seeking guidance on the design and implementation of patent and biodiversity policies that will recognize and advance the objectives of the Convention on Biological Diversity (CBD).

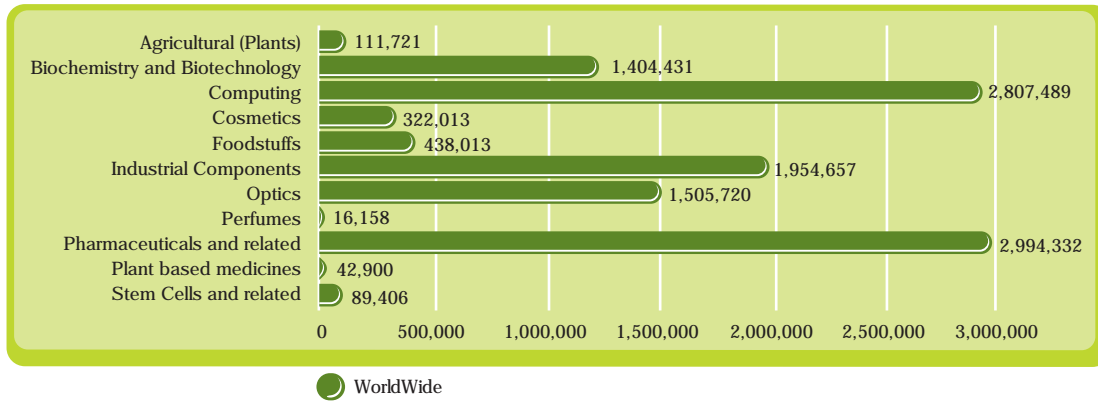
To contribute to efforts towards a more mutually supportive relationship between patents and biodiversity, the Union for Ethical BioTrade (UEBT) commissioned an analysis of the patent landscape for natural ingredients in the cosmetics sector, as well as study of the types and origins of plants referenced in these patent publications and the types of claims being sought and granted. Research was conducted by Dr. Paul Oldham, Research Fellow at the ESRC Centre for Economic and Social Aspects of Genomics at Lancaster University and renowned expert on patents and biodiversity. The Information Notes in this series provide a summary of the data and main findings in the research conducted by Dr. Oldham on behalf of UEBT.

Patent trends in context

Patent activity worldwide accelerated dramatically since the 1990s, with the adoption of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) and the increasing internationalization of patent protection under regional and international patent instruments. In 2007, an estimated 1.85 million patent applications were filed worldwide, approximately 760,000 grants were awarded and 6.3 million patents were estimated to have been in force. The growing number of patents can be seen as an indicator of inventive activity, but such a rapid expansion has also generated systemic problems, including a significant backlog in patent offices and questions as to the quality and value of many patents.

In the context of an overall increase in the number of patents, cosmetics show a significant level of patent activity. Indeed, there is greater activity in the cosmetics sector than in other sectors more often linked to the patent and biodiversity debate, including plant agriculture and traditional or herbal medicines. Nevertheless, patent activity is still much smaller than well-established areas of patenting such as pharmaceuticals, computing, biochemistry and biotechnology. Perfumes - which have traditionally been protected by trade secrets - are an emerging sector, though there is still relatively limited patent activity in comparison. Figure 1 shows cosmetics and perfumes in the context of trends for a wide range of sectors, analyzed on the basis of the number of patent publications between 1990 and January 2010.

Figure 1: Patent trends worldwide by technology sector

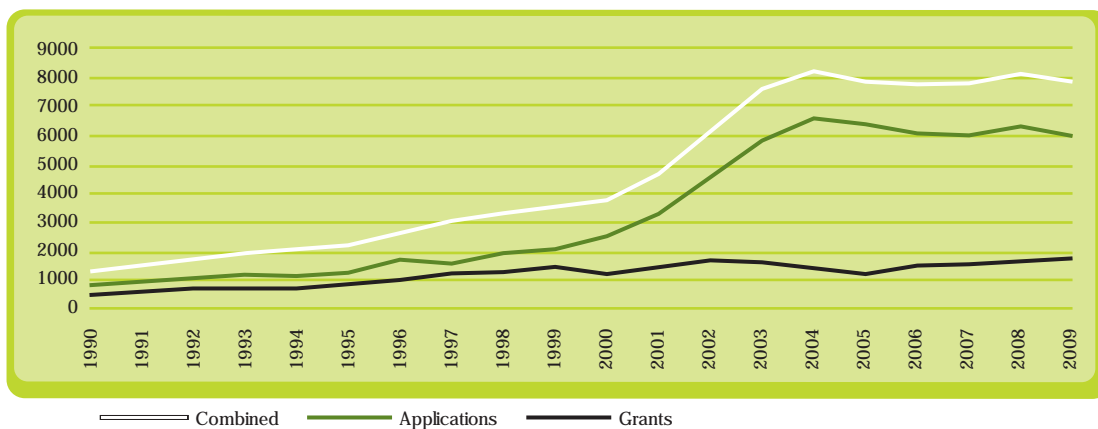


It is also interesting to note the range of materials and technologies involved in patent applications for the cosmetics and perfumes sectors. This is clear from an analysis of patent classification codes, which group patents according to the technical features of the inventions. Looking at the technical fields referenced in relation to cosmetics and perfumes, patent activity in these sectors is typically dominated by peptides, but it extends into biochemistry and more recent emerging areas such as nanotechnology. There are strong linkages between the technical fields referenced in cosmetics and in medicinal preparations, as well as in other areas of medicine. Another relevant finding is the prevalence of biotechnology among the technical fields in which patent activity from the cosmetics and perfumes sectors is taking place. This is important in the context of the access and benefit sharing rules of the CBD, which focus on genetic resources, and have, for this reason, been dismissed by some companies in the sector as being inapplicable to their biodiversity-based research and development.

Trends for cosmetic and perfume ingredients

Ingredients are an area of much product and technology innovations in cosmetics and perfumes, and consequently the focus of significant patent activity. As a starting point in identifying patent activity for natural ingredients and extracts, a series of sub-searches of the overall cosmetics and perfume data were conducted on the terms “ingredient” or “ingredients” or “extract” or “extracts” or “family” or “genus” or “species” in the main jurisdictions (the United States, the World Intellectual Property Organization - for the Patent Cooperation Treaty or PCT, the European Patent Office, Japan, Germany, France and the UK). As noted by Figure 2, this points to a growing demand for patent protection in relation to ingredients for cosmetics and perfumes, with a steep increase from 2000.

Figure 2: Trends in applications and grants for ingredients



In part, this trend may be a consequence of a change at the US patent office, which only began publishing patents at the application stage from 2001. However, it is also a sign of an increase in demand for protection in Japan, under the European Patent Convention and the Patent Cooperation Treaty and European countries as revealed in Figure 3.



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Figure 3: Patent publication trends in the major offices

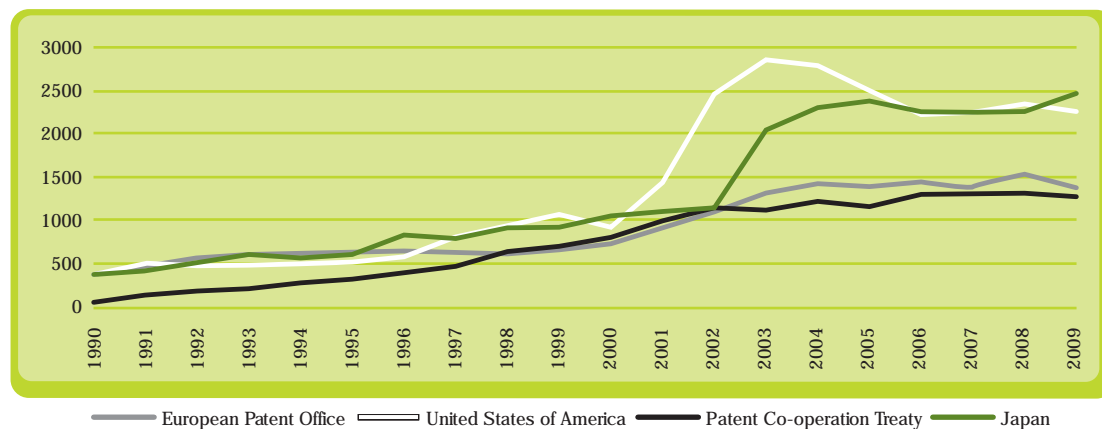


Figure 3 reveals a declining trend in patent publications in the United States and a rising trend for Japan, The European Patent Office and the Patent Cooperation Treaty. In practice, trends for the European Patent Office and the Patent Cooperation Treaty are of greater significance than individual countries because they produce multiplier effects. That is, under these instruments a single application may be submitted that may potentially become a patent grant in multiple countries.

In total, approximately 60 countries (excluding regional and international instruments) were engaged in patent activity for cosmetics and perfumes involving ingredients and extracts. Outside the major countries patent activity is emergent for India, Brazil, China, South Africa, Thailand, Malaysia, Argentina and Cuba. However, as Table 1 reveals, activity in developing countries is minimal compared with overall patent activity.

Table 1: Main filing countries/instruments for ingredients and extracts

Filing Country/Instrument	Records	Filing Country/Instrument	Records
United States of America	42708	Russian Federation	44
Patent Co-operation Treaty	31948	Belgium	44
Japan	30602	Russian Federation	44
European Patent Office	20847	Austria	39
France	14742	Taiwan	38
Germany	9026	Norway	34
United Kingdom	4136	Ireland	32
Italy	910	Czech Republic	23
Filing Korea, Republic of	859	South Africa	22
Switzerland	717	Poland	20
Australia	371	Greece	18
Denmark	356	Thailand	18
Israel	270	Iceland	17
Canada	244	Malaysia	17
India	200	Monaco	17
Sweden	184	Argentina	16
Luxembourg	156	Cuba	12
Spain	154	Croatia	11
Brasil	135	Singapore	11
Finland	81	Czechoslovakia	10
Netherlands	80	Portugal	9
China	79	Egypt	8
Hungary	78	Mexico	7
New Zealand	60	Morocco	6
Belgium	44	Indonesia	5



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It is important to note that a patent application may also extend beyond an individual country and the main jurisdictions. A patent family refers to a set of patents taken in various countries to protect a single invention. An analysis of patent family data for ingredients and extracts revealed activity in 74 countries beyond the main jurisdictions, including in Africa, Asia, South America and Oceania. This trend is driven by the Patent Cooperation Treaty and regional patent instruments (including the two African regional instruments and the Eurasian regional patent organisation), which provide a unified procedure for filing patent applications in several countries.

In order to provide an insight into the companies and institutions engaged in patent activity, Table 2 sets out the top 30 patent assignees for cosmetics and perfumes involving ingredients and extracts. No consistent attempt has been made to group patent assignees to parent companies (i.e. Hindustan Lever is a subsidiary of Unilever) or to take account of mergers and acquisitions. However, Table 2 serves the useful purpose of highlighting the main players and reveals the presence of specialist supplier companies for the cosmetics industry (such as Firmenich SA) and crossovers with pharmaceutical companies (such as Merck).

Table 2: Top patent assignees for extracts and ingredients

Rank	Patent Assignees	Applications	Grants	Rank	Patent Assignees	Applications	Grants
1	L'Oréal SA	7563	2732	16	Noevir KK	587	163
2	Procter & Gamble CO	3749	1720	17	Firmenich SA	525	302
3	Kao Corp	2672	942	18	Wella AG	481	271
4	Shiseido CO Ltd	2296	520	19	Dow	447	310
5	Unilever	2214	1507	20	Ciba Geigy AG	428	140
6	Henkel KGAA	1383	342	21	Givaudan SA	420	243
7	Hindustan Lever Ltd	1343	692	22	BASF AG	400	244
8	Beiersdorf AG	1194	262	23	Takasago Int Corp	347	156
9	Lion Corp	1069	113	24	Conopco Inc	340	208
10	Pola Chem Ind Inc	995	133	25	Merck Patent GMBH	334	87
11	Kanebo Cosmetics Inc	967	254	26	Avon Prod Inc	332	120
12	Unilever Home & Personal Care USA Div Co	824	508	27	Rhodia Acetow AG	311	127
13	Kose KK	781	184	28	Symrise GMBH & Co KG	304	77
14	Colgate Palmolive Co	733	488	29	Kimberly Clark Tissue Co	298	109
15	Johnson & Johnson	651	211	30	Sunstar Chem Ind Co Ltd	296	78

Natural ingredients and extracts

Ingredients and extracts for cosmetics and perfumes may be drawn from a variety of sources, including synthetic compounds or minerals such as mica used to add sheen and glitter. Nevertheless, natural ingredients and plant extracts are gaining ground in the cosmetics sector, as they fulfil growing consumer demand for natural products. "Green" products do not necessarily refer to the conservation and sustainable use of biodiversity, but biodiversity-based products and processes, which are increasingly subjected to patent protection. This raises critical questions on how access to the resources and associated traditional knowledge took place, and how derived benefits are shared.

To target natural ingredients within the patent records for ingredients, a two-stage strategy was employed. First, the records were searched for references to the Latin name of species using a thesaurus of over 1 million species names. Second, the ingredients and extracts data was sub-searched for references to "natural," "herbal," "herb," "plant" or "plants," "family," "genus" and "species." This approach captured all references to species names and also captured references to natural ingredients or extracts for statistical purposes.

This reduced the data by approximately 30% to about 45,535 applications and 19,110 grants. Figure 4 shows patent publication trends for this reduced dataset and includes comparison for the wider ingredients and extracts data. It makes clear that natural ingredients and extracts dominate overall patent activity for cosmetics and perfumes involving ingredients.



Figure 4: Patent activity involving natural ingredients and extracts

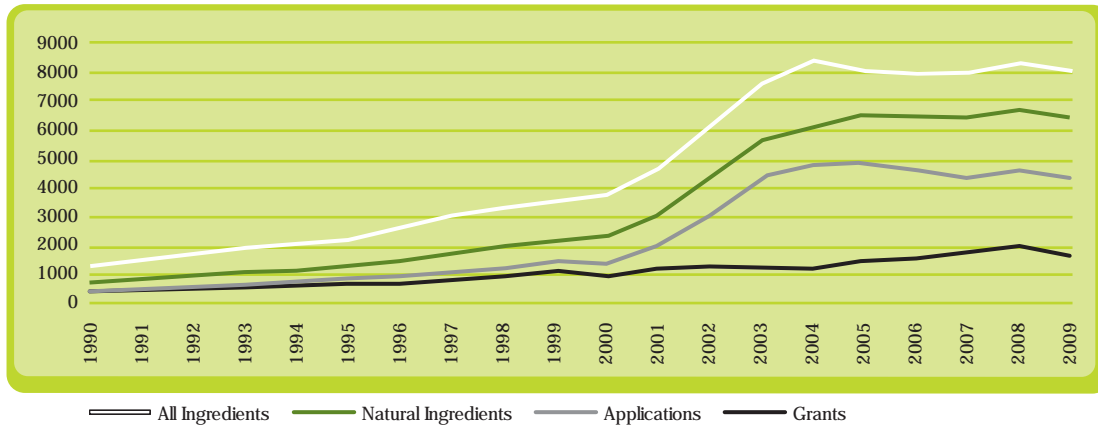


Table 3 provides a breakdown on the top 30 patent assignees for natural ingredients and extracts, including application and grant information. When compared with the wider assignee data for all ingredients and extracts, Table 3 demonstrates that the top assignees remain the same, but their relative rankings are affected (for example, Kao Corp drops one place in the rankings to be replaced by Unilever).

Table 3: Top Patent Assignees for Natural Ingredients and Extracts

Rank	Patent Assignees	Applications	Grants	Total
1	L'Oréal SA	4561	1764	6325
2	Procter & Gamble Co	3054	1441	4495
3	Kao Corp	1662	590	2252
4	Unilever	1612	1139	2751
5	Shiseido Co Ltd	1371	356	1727
6	Hindustan Lever Ltd	906	491	1397
7	Henkel KGAA	892	251	1143
8	Unilever Home & Personal Care USA Div Co	662	437	1099
9	Lion Corp	651	66	717
10	Beiersdorf AG	573	169	742
11	Pola Chem Ind Inc	528	84	647
12	Kose KK	528	119	647
13	Johnson & Johnson	528	174	702
14	Colgate Palmolive Co	526	390	916
15	Kanebo Cosmetics Inc	507	141	648
16	Noevir KK	428	121	549
17	Ciba Geigy AG	371	128	499
18	Wella AG	314	173	487
19	Givaudan SA	286	183	469
20	Merck Patent GMBH	283	76	359
21	Firmenich SA	275	217	492
22	Takasago Int Corp	256	113	369
23	Conopco Inc	256	125	381
24	Dow	246	179	425
25	Ichimaru Pharcos Inc	245	34	279
26	Kimberly Clark Tissue Co	244	95	339
27	Avon Prod Inc	240	73	313
28	Symrise GMBH & Co KG	231	53	284
29	BASF AG	229	138	367
30	KPSS KAO Professional Salon Services GMB	227	51	278



Concluding remarks

Patent protection has clearly become more important to cosmetics companies over the last 20 years with activity for perfumes constituting an emerging area. Between 1990 and January 2010 190,287 patent publications for cosmetics and perfumes were published in the major patent offices rising to 329,983 publications worldwide. Activity is concentrated in cosmetics, notably skin care and hair products. Perfumes represent 9,942 patent publications in the main jurisdictions and 16,158 worldwide.

A major proportion of patent activity for cosmetics, and to a lesser extent perfumes, involves ingredients and extracts of natural origin. Natural ingredients and extracts from all sources accounted for 49% of activity. Natural ingredients and extracts from plants accounted for approximately 34% of patent activity. In practice, the 34% of patent documents involving extracts and ingredients from plants is a conservative estimate. Nevertheless it demonstrates the importance of patent activity originating from biodiversity within these sectors.

In the context of the implementation of the principles of access to genetic resources and equitable benefit sharing established by the CBD, these trends raise a number of questions. First, how does or could the proliferation of patents in the cosmetics and perfumes sector impact research and development focused on natural, biodiversity-based ingredients? In common with other areas of patent activity, the high numbers of patent applications increase the risk of low quality. This report has not sought to assess the inventiveness of patent claims. Nevertheless, the combinations of ingredients and extracts for cosmetic and perfume preparations that dominate these patents may not, in fact, be particularly inventive. In short, as happens in other sectors, patent activity in cosmetics and perfumes may be dominated by low quality applications, which will have negative implications for other producers and those engaged in actual inventive activity.

Second, with the proliferation of patents, determining the benefits actually or potentially derived from these patents becomes difficult to assess. Patent data tells us very little about the actual economic value of patented methods and products, except that patent applicants judged their claimed inventions to be of sufficient importance to pursue protection in one or more countries. Moreover, as in other sectors, there seems to be growing use of defensive patenting strategies in the cosmetics and perfumes sector. In other words, more and more patents may not be sought with a view to direct exploitation but merely to secure their position and prevent further research and development in a particular field. Historically, most patents across most sectors have been of low value. The situation may be similar in the case of the cosmetics and perfumes patent documents considered in this research. For example, most of the patents in this research have not been cited by later patents. This is probably due to their lack of importance for ongoing innovation and research and development efforts.

The problem is a lack of empirical attention to the relationship between patent protection and subsequent revenue. Work is presently underway by the OECD, statisticians and economists to link patent data to firm level financial data. This is methodologically challenging, but further research on the relationship between patent activity and company financial data in the cosmetics and perfumes sector would provide better insights on the benefits generated by biodiversity-based patents and patented products.

Finally, the growing number of patents that cover multiple countries also becomes important in the context of debates under the CBD. One patent application involving genetic resources and traditional knowledge may in fact multiply across the world, providing patent protection even in the countries from which the related biodiversity or associated traditional knowledge originated. While such protection is unlikely to affect traditional uses of biodiversity, it could have a serious impact on the local development of the resources or on market access for products utilising the resource in countries where patent protection has already been secured. Indeed, this issue becomes relevant even before the grant of patents: the increasing lag times between patent applications and patent grants mean that even patent applications can be disincentives for other research and development or commercialization in the same field.

Regardless of the concrete benefits or limitations effectively derived from these patents, the importance of biodiversity for the development of ingredients for cosmetics and perfumes is clear. These findings thus highlight the need for companies in the cosmetic and perfume sectors to adequately consider biodiversity, particularly the CBD provisions on access and benefit sharing and the rights of indigenous and local communities. A key issue will be examining their supply chain to determine the origin of materials and the terms and conditions under which these materials are obtained in order to identify appropriate strategies and actions for meeting the requirements of the CBD.



Endnotes

- i. WIPO (2009) World Intellectual Property Indicators. Citation at 8. Location: http://www.wipo.int/export/sites/www/ipstats/en/statistics/patents/pdf/wipo_pub_941.pdf
- ii. Worldwide data refers to all available jurisdictions in the Thomson Innovation database (i.e. plus 60 offices). Sector figures are based on main International Patent Classification codes for the respective sectors. Plant biotechnology is not included in the counts for agriculture.
- iii. This analysis is based on the patent library classification codes from 27,734 records related to cosmetics and perfumes from 2008.
- iv. Patent application data includes administrative republications (i.e. with search reports, corrections, continuations etc.) for which an applicant must pay fees, constituting an indicator of actual demand for protection. Underlying demand is revealed by focusing only on first filings through patent family analysis (not shown). The figures presented here exclude 1125 translations of documents and 155 other documents. Figure 3 consists of approximately 67,648 applications and 24,825 grants within the main patent jurisdictions
- v. A degree of caution is required in interpreting data from Japan. Historically, patent applications in Japan were limited to one claim per application leading to the submission of multiple applications with the same title containing a different claim. While this has changed applicants from Japan continue to display a tendency to submit multiple applications with the same title.
- vi. Overall figures will exceed total records due to the effects of regional and international instruments in the priority field.
- vii. Information on these countries is exposed in INPADOC family information.
- viii. An additional 364 documents register as translation, 63 as kind C and 3 as kind code H.

For more information

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