As more countries liberalise their cannabis policies, there has been a rapid increase in the number of registered IP rights as competitors seek to establish their places in the market.

The past few years have seen a global trend towards the liberalisation of cannabis policies, with cannabis becoming legalised in numerous countries and US states for recreational and/or medical use.

Cannabis is currently authorised for medicinal use in more than 25 countries, including Australia, Canada, Germany, the Netherlands and the UK.

And while recreational use is currently still prohibited in most countries, there are exceptions including Canada and Uruguay, as well as 11 US states and the District of Columbia. Additionally, numerous other US states, and countries such as the Netherlands and Portugal, have adopted a decriminalisation policy, where criminal convictions are removed or reduced.

This liberalisation has led to a vast increase in the number of cannabis-related companies, which are estimated to have generated almost $14bn globally in 2018, compared to $3.5bn the previous year.

What is being patented?

Although natural cannabis plants themselves are not patentable, patent protection is potentially available for genetically modified cannabis plants and novel isolated genes that produce cannabis active agents. Protection is also potentially available for novel processing/extraction methods, formulations, uses, and delivery devices. However, what exactly are applicants seeking to patent?

A recent search of patent database, Espacenet, identified over 600 patent families with ‘cannabis’ in the title. As illustrated in Figure 1, when considering only the ‘representative’ patent for each family, there has been a five-fold increase of the number of publications (either an application or granted patent) in 2018 with 111 publications, compared to only 22 publications in 2013. Moreover, in the first six months of 2019, 104 applications/granted patents have already been published, indicating that 2019 will see the highest number of publications yet.

As can be seen in Figure 2, the majority (127) of these patent families are for inventions relating to the processing of the cannabis plants or extraction of various components (eg, cannabidiol or ‘CBD’). A large number (74) are for agriculture, cultivars or genetically modified plants, with smaller numbers for cannabis detection or analysis (51), administration or delivery methods/devices (28), and cannabis genomes, proteins or vectors (12). In terms of cannabis-related products, 73 are medicinal cannabis patent families, with a further 76 concerning food products, including edibles, oils and lozenges, and 69 covering cannabis beverages.

Processing

This category of patent families incorporates the refining process of cannabis, extraction methods for cannabis oil and subsequent applications in methods of identifying the origin of cannabis and processes for suspending cannabis oil in glycerin. Out of the scores of cannabinoid found in marijuana and hemp plants, CBD and tetrahydrocannabinol (THC) are the two primary compounds of interest. CBD is said to lack the psychotropic effects of THC and, on its own (in ‘pure form’) is not considered a controlled substance under the UK Misuse of Drugs Regulations.

Accordingly, some of the granted patents include a method for removing THC from raw cannabis oil, a cannabis processor apparatus for producing finely ground cannabis powder, extraction of cannabinoids using lipids as an extraction solvent (as a number of compounds of interest are said to have poor aqueous solubility), and a method for extracting hemp seed oil.

Medicinal cannabis patents

Of the 73 patent families relating to medicinal use identified from our search, the largest numbers were for use in oncology (11), skin conditions (11) and gastrointestinal indications (9). Others included pain relief, sleep disorders, mental health conditions, hypertension, dental indications, neurodegenerative disorders and inflammatory conditions, with several other patents including claims for multiple indications.

Foods and beverages

Cannabis-based food products include ‘healthcare’ bread, noodles, vegetarian meats, biscuits, yogurt, honey, as well as protein powders, oils, lozenges and chewing gum, while types of beverages range

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Figure 2: Number of cannabis-related patent families categorised into fields of invention published from 1981 – July 2019. Source: Espacenet

The predicted increase in the number of registered patents will inevitably result in a surge in cannabis-related patent litigation.”

from health teas\textsuperscript{12} to cannabis milks and wines. However, it is notable that out of the 76 patent families related to food products, 31 ‘representative’ patents have been refused, abandoned or expired, and 30 out of 69 beverage-related ‘representative’ patents have been refused, abandoned or expired.

Cosmetics

It would appear that only one ‘representative’ cosmetic cannabis-related patent has been granted – CN104758217 (B) – a shampoo with hemp extract,\textsuperscript{13} and one other refused – KR20160121268 (A) – an anti-ageing skin treatment.\textsuperscript{14} However, there are a wide spectrum of patent applications including skin whitening products,\textsuperscript{15} and cannabis fibres for relieving gynaecological inflammation.\textsuperscript{16}

‘Land grab’ of applications

It appears that there has been a patenting ‘land grab’ where many patent applications contain a broad claim scope not always accompanied by sufficient supporting data, which then appear to be subsequently abandoned.

Although there has already been a rapid increase in the number of cannabis-related patent families published in recent years, this will likely increase further in coming years as more countries liberalise regulations around medicinal and recreational use. It is also likely that a further increase will be observed because of the lag time for medicinal cannabis patents, due to the need to obtain experimental and trial data to sufficiently demonstrate a safe clinical benefit for patients.

The predicted increase in the number of registered patents will inevitably result in a surge in cannabis-related patent litigation. The first patent infringement action was initiated in July 2018 by United Cannabis Corporation against Pure Hemp Collective.\textsuperscript{17} These proceedings concern United Cannabis’ patent, US 9730911, related to liquid formulations of highly enriched cannabinoid extracts. This will be an important case to follow as it will likely set a precedent for future disputes related to cannabinoid formulations.

Footnotes

3. Espacenet search performed on 8 July 2019, searching for ‘cannabis’ in patent title. It is likely that the search term ‘cannabis’ alone has not picked up many other patent families with terms such as ‘cannabidiol’, ‘CBD’, ‘marijuana’ or ‘hemp’ in the title.
4. The ‘representative’ patent being the single patent which Espacenet chooses to list from each patent family identified by the search.
6. Jiang Lianzhou; Li Yang; Qi Baokun; Wang Yan; Cao Liang. Northeast Agricultural University. Method for extracting cannabis sativa seed grease by enzymatic hydrolysis combined with acid extrusion. CN102816631 (B) 26 February 2014.
10. Zhao Litaoh; Guo Chunying; Zhang Xing; Sun Yufeng; Wang Hui; Zhang Dongqing; Yu Ge; Tang Huanwei; Liu Xinjie; Yang Xuebing. Heilongjiang Academy of Sciences. Cannabis health care bread.CN105165965 (B). 21 December 2018.
16. Zhang Ke et al, Hanyi Bio Tech BEIJING Co Cannabis sativa fibers for preventing and/or relieving gynecological inflammation and application of cannabis sativa fibers to sanitary supplies. CN109394835 (A) 1 March 2019.

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