

Cannabis

Food, Cosmetics, Pharmaceuticals



Industrial Hemp

Hemp is one of the oldest cultivated and ornamental plants in the world. Industrial hemp (*Cannabis sativa* L.) has a tetrahydrocannabinol (THC) content of less than 0.3%, making it unsuitable as a raw material for psychoactive substances.

In the EU, over 60 varieties of *Cannabis sativa* are approved for cultivation. In Germany, cultivation has been permitted again since 1996 and must be reported to the Federal Office for Agriculture and Food (BLE).

Medical Cannabis

Medical cannabis includes strains with a high THC content. Since the legalization of cannabis as a medicinal product in 2017, controlled indoor cultivation for medical purposes has been carried out in Germany since 2019. This is subject to strict regulations and requires approval from the Federal Institute for Drugs and Medical Devices (BfArM).

Cannabinoids and Additional Compounds

In addition to cannabinoids, the cannabis plant contains other characteristic chemical compounds such as terpenes and flavonoids.

- **Cannabinoids:** Over 100 different cannabinoids have been identified, including *delta-9-tetrahydrocannabinol* (**Δ9-THC**), *cannabidiol* (**CBD**), *cannabigerol* (**CBG**), and *cannabinol* (**CBN**).
- **Terpenes:** More than 200 terpenes (essential oils) determine the plant's scent and flavor. The most important ones include limonene, myrcene, pinene, and caryophyllene.
- **Additional Components:** In addition to canna-

binoids and terpenes, cannabis contains essential fatty acids, amino acids, and flavonoids.

THC Limits and Guidelines

The total THC content in industrial hemp must not exceed 0.3%. If this limit is exceeded, the product is classified as a narcotic.

The Federal Institute for Risk Assessment (BfR) recommends the following THC guideline values for ready-to-eat foods:

- **Alcoholic and non-alcoholic beverages:**
5 µg/kg
- **Edible oils:** 5000 µg/kg
- **All other foods:** 150 µg/kg

These values refer to total THC (including Δ9-THC and its precursor Δ9-THCA) and serve as guidance for food monitoring and manufacturers.

Legal Classification of Cannabidiol

In addition to THC, another important cannabinoid found in hemp-based products is cannabidiol (**CBD**). CBD was added to the Prescription Drug Ordinance (AMVV) in 2016, making CBD-containing pharmaceuticals subject to prescription requirements.

The Federal Office of Consumer Protection and Food Safety (**BVL**) states that products with targeted CBD enrichment are only marketable if they are approved as medicinal products or novel foods.

Since 2019, cannabinoids have been listed in the European Food Safety Authority (**EFSA**) Novel Food Catalogue, classifying CBD-enriched foods as novel foods. In contrast, hemp seeds, hemp oil, hemp flour, and defatted hemp protein are not considered novel.

Cannabis

THC and CBD Analysis



Analysis at BioTeSys GmbH

BioTeSys GmbH analyzes the main cannabinoids using **UPLC/HPLC-UV/DAD** and **UPLC-MS/MS**. The detection limits are approximately 1 µg/g (**UPLC-UV**) and 1 ng/g (**UPLC-MS/MS**). These chromatographic separation methods enable precise quantification of THC, THCA, CBD, and CBDA. Additional cannabinoids can also be monitored.

Whether THC exclusion analysis or CBD content determination – we provide fast and precise results for the quality assurance of your products. Food, cosmetic, and medical products are tested in compliance with legal regulations.

Research and Development

The effects of cannabis products are based on complex interactions of numerous components.

BioTeSys examines the efficacy of multi-compound mixtures using cell-based in-vitro test models.

BioTeSys GmbH – Your partner for the development, quality assurance, and safety of hemp-based products.

Contact

Dr. Roland Wacker – Head of Analytics

Tel.: +49 (0) 711 310 571 46

Email: r.wacker@biotesys.de