

# Orcinols and Phloroglucinols

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**Cannabidis strobouli (cannabis)**

**esrar**

***Cannabis sativa* Cannabaceae**

**Indian hemp, hashish**

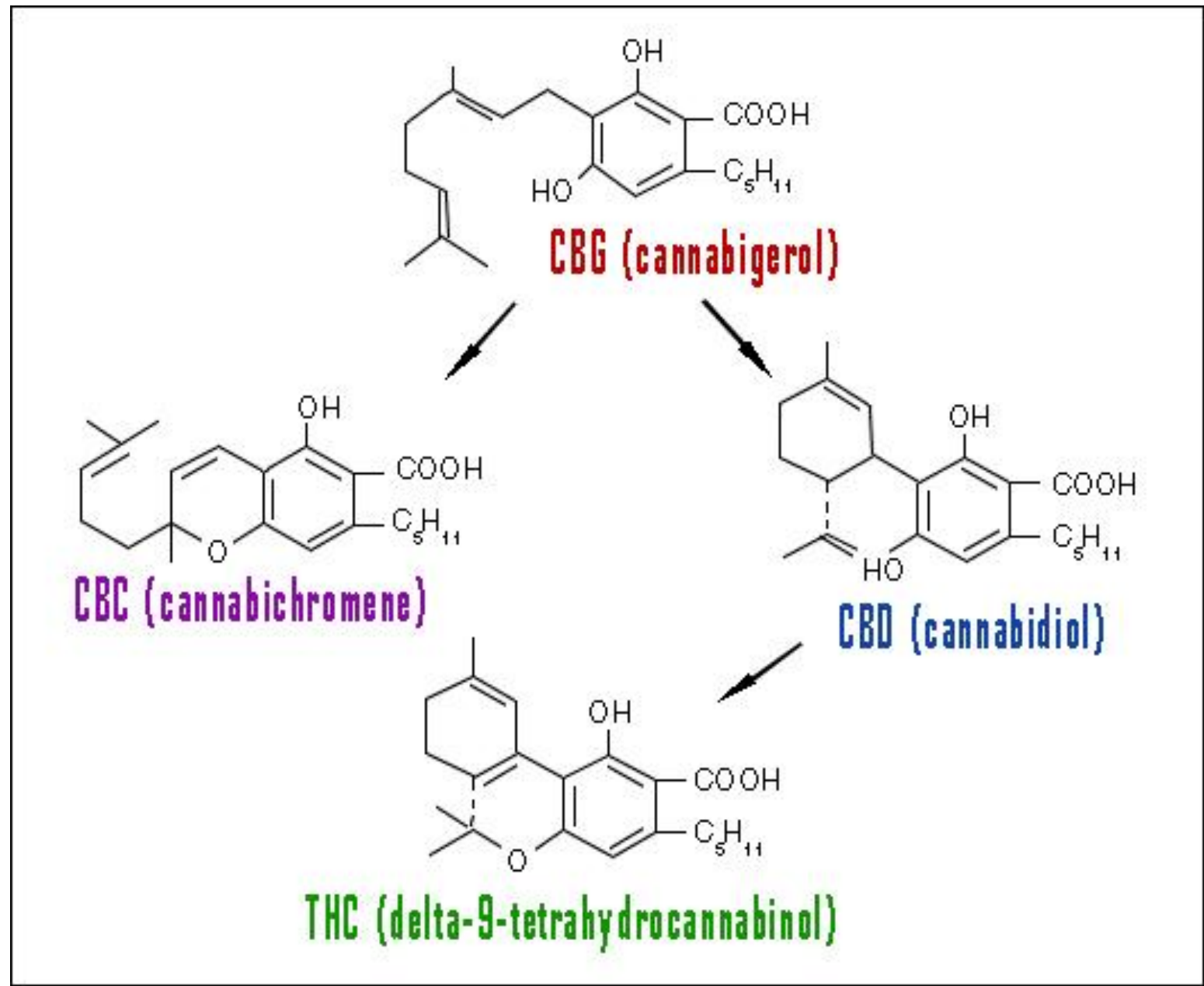
A drug of ancient use in the Ayurvedic and Chinese systems of medicines (among other things, as an analgesic and anesthetic). The inconsistency of its therapeutic activity, the poor conversion of its preparations, the difficulty in deciding optimal doses, and the emergence of synthetic analgesics and hypnotics lead to the gradual abandonment of its use, and to its disappearance.

A resin (cannabis) is obtained mostly from the female flowers (*Cannabidis strobouli*), which contain hundreds of different compounds : sugars, fatty acids, essential oil with terpenoid compounds, flavonoids, fatty acids, etc. The most interesting constituents are the **cannabinoids**.

Cannabinoids are terpenophenolics classified as a function of their structure. The chief representatives of these groups are :

- $\Delta^9$ -tetrahydrocannabinol ( $\Delta^9$ -THC or THC, a benzotetrahydropyran)
- Cannabinol (CBN), a dibenzopyran (a degradation product of THC)
- Cannabidiol (CBD), a diphenol

THC and CBD occur in the fresh plant. Cannabigenol is a precursor of these compounds. CBN is a degradation product of THC.



**Pharmacological Properties** : The activity of Cannabis is based on  $\Delta^9$ -tetrahydrocannabinol (THC) alone. Other cannabinoids seem biologically inactive. THC is particularly lipophilic, and is rapidly absorbed (peak plasma concentration after inhalation : 7-8 min). It is metabolized in liver to hydroxylated compounds (e.g., 11-hydroxy-THC), and excreted in the feces or urine.

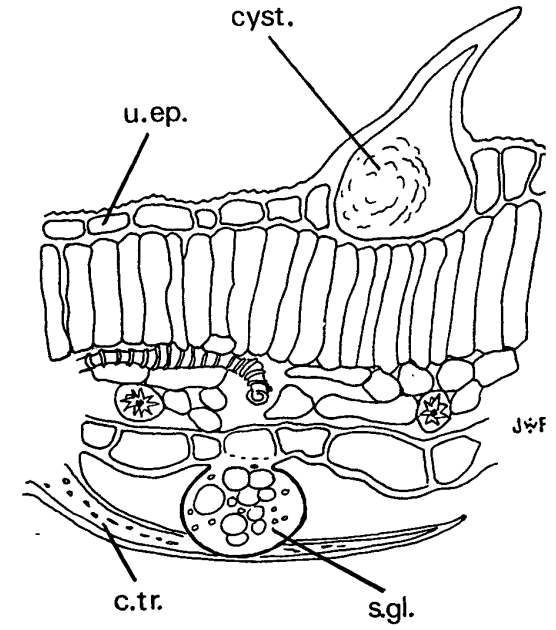
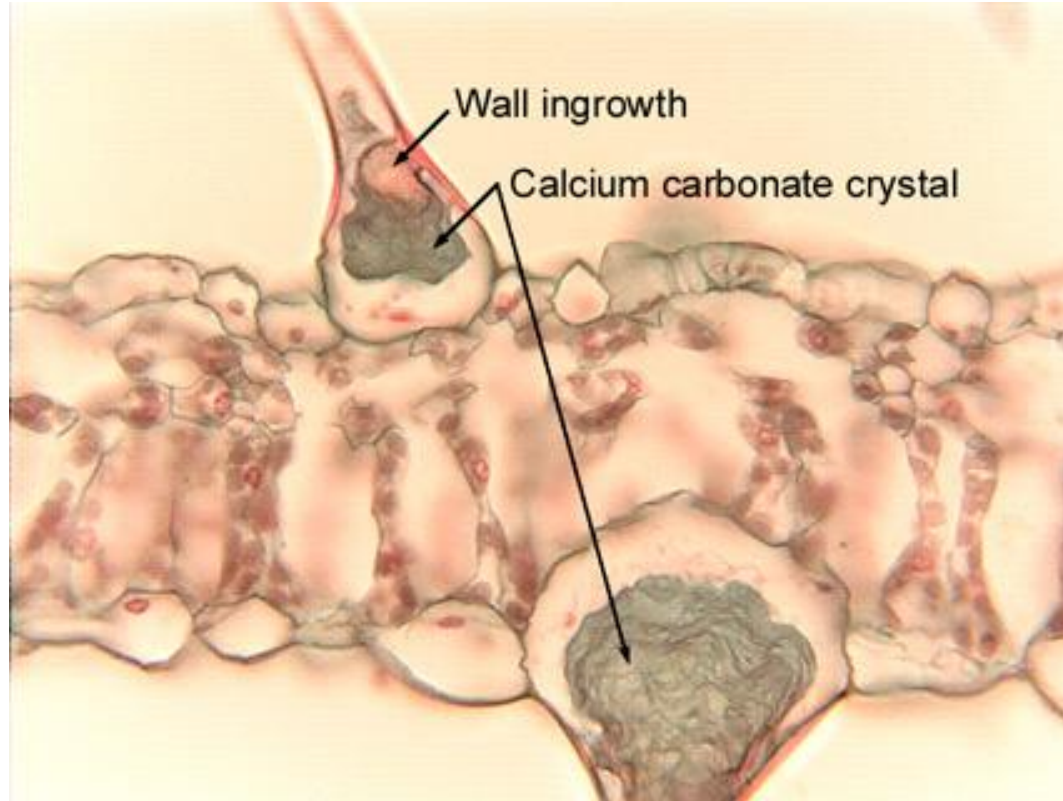
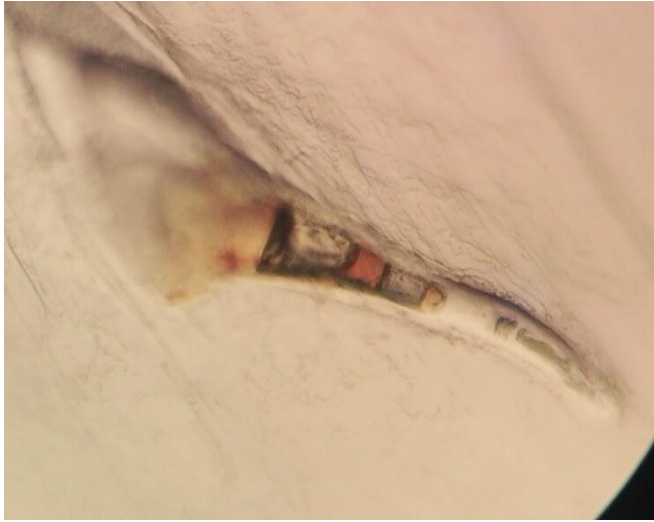
**Acute Manifestations:** A single dose of THC (or of Cannabis) may cause only a few somatic symptoms, which remain minor in the vast majority of cases : blood-shot eyes, dry mouth, tachycardia, increased appetite, and only at high doses, orthostatic hypotension. THC intoxication manifests itself mostly by psychic symptoms. Feelings of well-being, euphoria, and relaxation commonly result from cannabis intake.

Cannabis rarely induces hallucinations (massive doses, psychotic individuals). Syndromes with delirium and anxiety, panic and depersonalization seem to occur more frequently.

**Chronic Manifestations** : Chronic cannabis use induces functional alterations in the bronchi (THC is a bronchodilator). Like the combustion of tobacco, with which it is often mixed, the combustion of cannabis produces carcinogens.

**Characteristic Identification** : Under the microscope, the leaf displays, on both surfaces, many covering trichomes, unicellular, smooth, and curved. **Some of them are enlarged at the base, due to the presence of calcium carbonate crystals (cystoliths).**





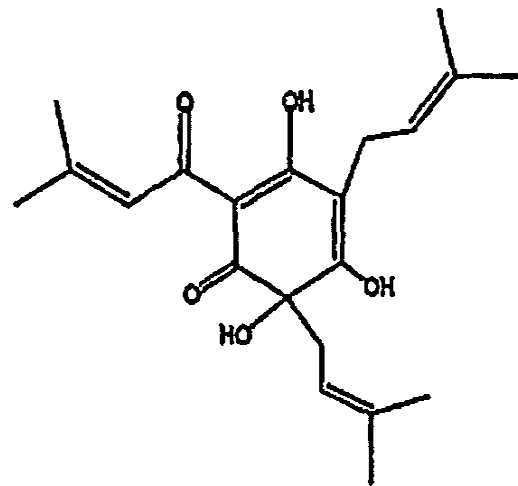
**Lupuli strobouli**  
*Humulus lupulus*

**hops**  
**Cannabaceae**

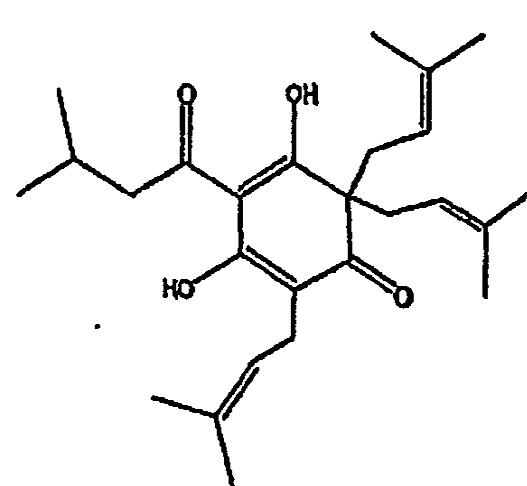
**şerbetçiotu**

The dried pistillate inflorescence of hope (=hops) is used in phytotherapy for its «sedative» virtues.

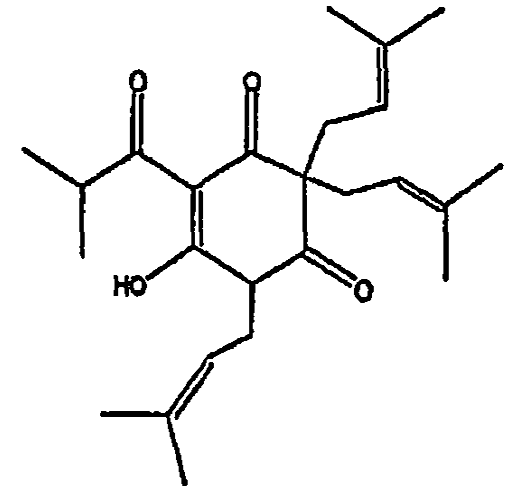
The drug contains flavonoids, essential oil, and as the active components phloroglucinol derivatives. These compounds are responsible for the characteristic bitterness of hops; they are prenylated derivatives of 1-acylphloroglucinol: lupulone, humulone and related compounds. Their concentration is greater than 15%, and can reach 30%.



Humulone



Lupulone



Colupulone

In Germany, the Commission E monograph describes that the drug is used as a sedative for insomnia, states of anxiety, and nervousness.

## **Reference Books :**

### **Main Book**

**Bruneton, J., Pharmacognosy, Phytochemistry, Medicinal Plants, TEC & DOC Editions, Paris 1999**

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