18 January 2023 Palais des Nations, Room XXI Geneva, Switzerland



Workshop on industrial hemp

Hemp:

What are we discussing?

Botanical characteristics and international regulations



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Part I



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botany: evolution.

WHERE DOES HEMP COME FROM?

Hemp: What are we discussing? Botanical characteristics and international regulations

Kenzi Riboulet-Zemouli

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Geneva. Switzerland

Center of origin of Cannabis sativa L. (hemp)

Vegetation History and Archaeobotany https://doi.org/10.1007/s00334-019-00731-8

REVIEW



Cannabis in Asia: its center of origin and early cultivation, based on a synthesis of subfossil pollen and archaeobotanical studies

John M. McPartland 1,2 · William Heaman 3 · Tengwen Long 4

Received: 20 December 2018 / Accepted: 6 May 2019 © Springer-Verlag GmbH Germany, part of Springer Nature 2019

Abstract

Biogeographers assign the Cannabis centre of origin to "Central Asia", mostly based on wild-type plant distribution data. We sought greater precision by adding new data: 155 fossil pollen studies (FPSs) in Asia. Many FPSs assign pollen of either Cannabis or Humulus (C-H) to collective names (e.g. Cannabis/Humulus or Cannabaceae). To dissect these aggregate data, we used ecological proxies. C-H pollen in a steppe assemblage (with Poaceae. Artemisia. Chenopodiaceae) was identified as wild-type Cannabis. C-H pollen in a forest assemblage (Alnus, Salix, Quercus, Robinia, Juglans) was identified as Humulus. C-H pollen curves that upsurged alongside crop pollen were identified as cultivated hemp. Subfossil seeds (fruits) at archaeological sites also served as evidence of cultivation. All sites were mapped using geographic information system software. The oldest C-H pollen consistent with Cannabis dated to 19.6 ago (Ma), in northwestern China, However, Cannabis and Humulus diverged 27.8 Ma, estimated by a molecular clock analysis. We bridged the temporal gap between the divergence date and the oldest pollen by mapping the earliest appearance of Artemisia. These data converge on the northeastern Tibetan Plateau, which we deduce as the Cannabis centre of origin, in the general vicinity of Qinghai Lake. This co-localizes with the first steppe community that evolved in Asia. From there, Cannabis first dispersed west (Europe by 6 Ma) then east (eastern China by 1.2 Ma), Cannabis pollen in India appeared by 32.6 thousand years (ka) ago. The earliest archaeological evidence was found in Japan, 10,000 BCE, followed by China.

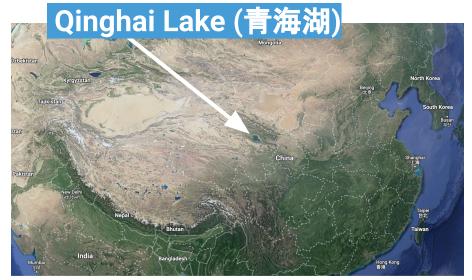
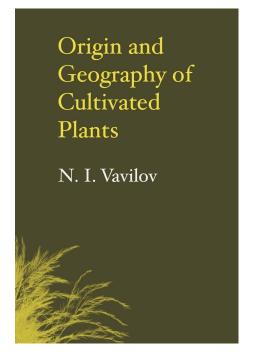


Image: Google Maps.

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Nikolai Ivanovich Vavilov (1887-1943)







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Arrival in Europe at the Neolithic period

Vegetation History and Archaeobotany (2018) 27:635-648 https://doi.org/10.1007/s00334-018-0678-7

REVIEW



Cannabis is indigenous to Europe and cultivation began during the Copper or Bronze age: a probabilistic synthesis of fossil pollen studies

John M. McPartland 1,20 · Geoffrey W. Guy · William Hegman 3

Received: 22 October 2017 / Accepted: 9 April 2018 / Published online: 5 May 2018 © Springer-Verlag GmbH Germany, part of Springer Nature 2018

Abstract

Conventional wisdom states Cannabis sativa originated in Asia and its dispersal to Europe depended upon human transport. Various Neolithic or Bronze age groups have been named as pioneer cultivators. These theses were tested by examining fossil pollen studies (FPSs), obtained from the European Pollen Database. Many FPSs report Cannabis or Humulus (C/H) with collective names (e.g. Cannabis/Humulus or Cannabaceae). To dissect these aggregate data, we used ecological proxies to differentiate C/H pollen, as follows: unknown C/H pollen that appeared in a pollen assemblage suggestive of steppe (Poaceae, Artemisia, Chenopodiaceae) we interpreted as wild-type Cannabis. C/H pollen in a mesophytic forest assemblage (Alnus, Salix, Populus) we interpreted as Humulus. C/H pollen curves that upsurged and appeared de novo alongside crop pollen grains we interpreted as cultivated hemp. FPSs were mapped and compared to the territories of archaeological cultures. We analysed 479 FPSs from the Holocene/Late Glacial, plus 36 FPSs from older strata. The results showed C/H pollen consistent with wild-type C. sativa in steppe and dry tundra landscapes throughout Europe during the early Holocene, Late Glacial, and previous glaciations. During the warm and wet Holocene Climactic Optimum, forests replaced steppe, and Humulus dominated. Cannabis retreated to steppe refugia. C/H pollen consistent with cultivated hemp first appeared in the Pontic-Caspian steppe refugium. GIS mapping linked cultivation with the Copper age Varna/Gumelniţa culture, and the Bronze age Yamnaya and Terramara cultures. An Iron age steppe culture, the Scythians, likely introduced hemp cultivation to Celtic and Proto-Slavic cultures.



Image from the article (p.641): "Fig. 4. Bin 3 (10,000-7,500 cal BP). Background base map by Natural Earth, free open-source map data, naturalearthdata.com"

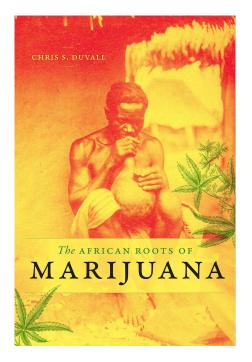
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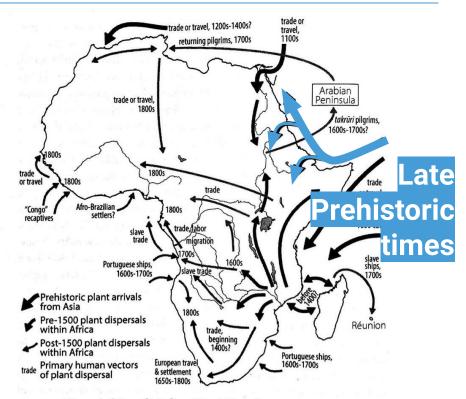
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Repeated arrivals in Africa ...





MAP 4.4. Dispersal of *Cannabis indica* within Africa before 1900. In addition to what is represented on the map, cannabis probably came to Mauritius after 1819, with indentured Indian laborers. Map by Chris S. Duvall.





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« Traditional crops are crops that have been grown for a long time by local communities and that are well adapted to the local agro-climatic conditions »

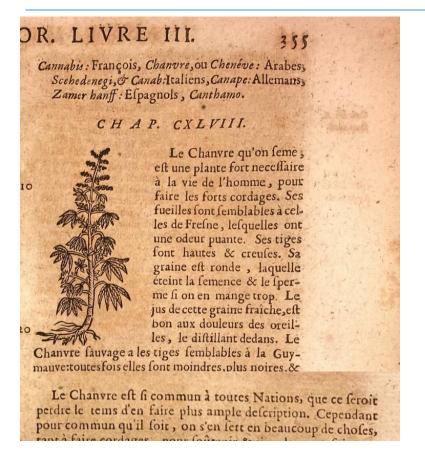


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Pedanius Dioscorides

Written in Anatolia, around 60 CE This image: edition of Lyon, 1680 CE

"A plant much necessary to life"

...

"so common to every nation that it would be a loss of time to describe it further"







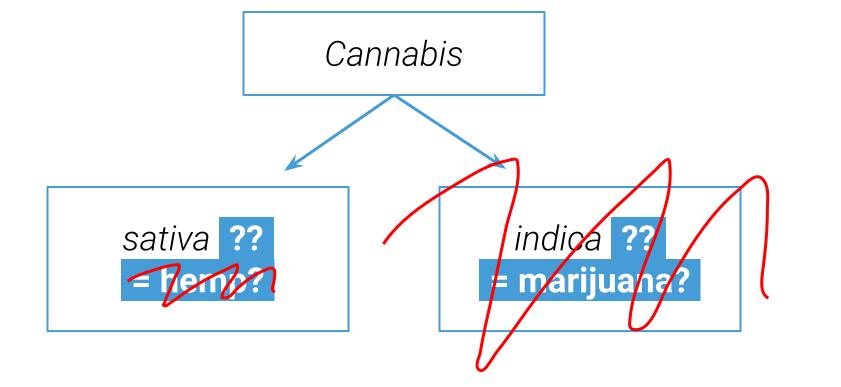
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botany: systematics.

THE FALSE 'HEMP VS MARIJUANA' DIVIDE

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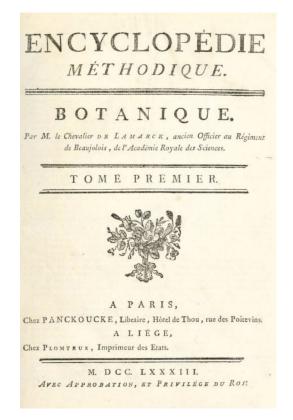
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2. CHANVRE des Indes , Cannabis Indica. Cannabis foliis alternis. N. Cannabis fimilis exotica.

Bault. Pin. 320. Cannabis peregrina, gemmis fruetuum longioribus. Morif. Hift. 3. p. 433. nº. 2. Kalengi-cansjava. Rheed. Mal. 10. p. 119. t. 60. Tsjeru-cansjava. Ibid. p. 121. t. 61. Bangue des Indiens. Dakka ou Bangua. Hist. des Voyages. Vol. 5. p. 188. fig.

2. Eadem caule altiore. Cannabis Indica. Rumph.

Amb. 5. p. 208. t. 77.

Cette plante, dont M. Sonnerat nous a communiqué des morceaux qu'il a rapportés de l'Inde, nous paroît une espèce très-distinguée de celle qui précède. Elle est moins grande, plus rameuse, à tige plus dure & presque cylindrique, & s'en distingue particuliérement en ce que ses feuilles font toutes constamment alternes. Leurs folioles font fort étroites, linéaires-lancéolées, & trèsacuminées. Les individus mâles en portent cinq ou fept; mais ceux qui font femelles n'en ont communément que trois sur chaque pétiole, & même les feuilles du fommet font tout-à-fait simples-Les fleurs femelles ont leur calice velu, & de longs styles qui le sont pareillement. Cette plante croît dans les Indes orientales. (v. s.) Sa tige dure & fon écorce mince, la rendent incapable de fournir des filamens femblables à ceux que l'on retire de l'espèce ci-dessus, & dont on fait un fi



Image: Wellcome Trust. CC-BY 4.0 (on wikimedia)



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← A young Nepali woman from the Shipti region of Darchula District wearing a hemp cloth sash belt.

A Nepali man from the Shipti region of Darchula District wearing the Bhangara [hemp cloth] →

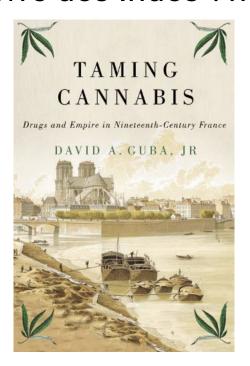
Photos: Robert C. Clarke (2007) "Traditional Nepali Hemp Textiles", Journal of Industrial Hemp, 12(2)





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"Chanvre des Indes": hashish and otherness



CONCLUSION: HISTORICIZING THE TAXONOMY OF CANNABIS

Despite persistent confusion and debates over the proper scientific taxonomy of cannabis, the polytypic concept concretized by Lamarck in 1783 has dominated Western scientific, popular, and legal perceptions of the plant and its byproducts through to the present day. ¹⁰⁵ Scientists, scholars, and laypeople alike generally believed and still believe that there are distinct species of cannabis – Cannabis sativa, Cannabis indica, and, after 1924, Cannabis ruderalis. ¹⁰⁶ Moreover, this polytypic concept has allowed, as in the above writings of French naturalists, travel writers, physicians, government officials, and literati, French authorities to speak of each subspecies as a pure type with essential characteristics reflective of contrasting (and unequal) cultures of cultivation and consumption.

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GACETA DE MADRID (1867)

Los verdaderos cáñamos de Asia y Europa constituyen una sola especie, el cannabis sativa: las diferencias que presenta la planta cultivada en la India, la Persia y la China, dependen de las condiciones climatológicas, y aunque algunos botánicos las han creído suficientes para hacer de esta una especie distinta con el nombre de Cannabis Indica, esta división no ha sido admitida, porque no existe ninguna modificación en los caracteres sobre los que descanse la determinación de la especie botánica.

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Cannabis and Cannabinoid Research Volume 3.1, 2018 DOI: 10.1089/cap.2018.0039

Cannabis and Cannabinoid Research

Mary Ann Liebert, Inc. & publishers

MINI-REVIEW

Open Access

Cannabis Systematics at the Levels of Family, Genus, and Species

John M. McPartland 1,2,*

Abstract

New concepts are reviewed in Cannabis systematics, including phylogenetics and nomenclature. The family Cannabaceae now includes Cannabis, Humulus, and eight genera formerly in the Celtidaceae. Grouping Cannabis, Humulus, and Celtis actually goes back 250 years, Print fossil of the extinct genus Dorofeeyig (=Humularig) reveals that Cannabis lost a sibling perhaps 20 million years ago (mya). Cannabis print fossils are rare (n = 3 worldwide), making it difficult to determine when and where she evolved. A molecular clock analysis with chloroplast DNA

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Taxonomic studies of Cannabis in China

Shao Hong1 and Robert C. Clarke2

Department of Biology and Genetics, Beijing Medical University, Beijing 100083, PRC ² Projects Manager, International Hemp Association, Postbus 75007, 1070 AA Amsterdam, The Netherlands

Shao Hong and Robert C. Clarke 1996. Taxonomic studies of Cannabis in China. Journal of the International Hemp Association 3(2): 55-60.

Many aspects of Cannabis taxonomy and systematics have been studied in the People's Republic of China (PRC) since it was founded in 1949. Most of the reports indicated that only one species (Cannabis sativa L.) exists in China and consists of two infra specific taxa (variously indicated either as subspecies, varieties or forms) sativa and indica. The fiber types low in THC are classified as subspecies sativa and drug types with higher THC contents are classified as subspecies indica. These drug varieties are found south of 42°N latitude in western China and south of 30°N latitude in eastern China. Since classical taxonomic studies fall short of fully answering questions about the evolution of Cannabis in China, various molecular methods are suggested.



Office on Drugs and Crime



American law and the species problem in Cannabis: Science and semantics

American law and the species problem in Cannabis: Science and semantics

Sections

Introduction

The treatment of cannable in the literature

Taxonomy and the "species"

Semantic questions concerning the use of terms

The scientific question concerning taxonomic structure in Cannabis Acknowledgements

Details

Author: Ernest SMALL Pages: 1 to 20 Creation Date: 1975/01/01

Bot. Rev. (2017) 83:327-381



Cannabis sativa L. - Botany and Biotechnology pp 101-121 | Cite as

Cannabis sativa and Cannabis indica versus "Sativa" and "Indica"

John M. McPartland

Chapter | First Online: 24 May 2017

7513 Accesses | 17 Citations | 14 Altmetric

Cannabis and Cannabinoid Research DOI: 10.1089/can.2016.0027

Cannabis and Cannabinoid Research

Mary Ann Liebert, Inc. & publisher.

MINI-REVIEW

The Name of Cannabis: A Short Guide for Nonbotanists

Antonino Pollio*

The genus Cannabis (Family Cannabaceae) is probably indigenous to wet habitats of Asiatic continent. The long coexistence between mankind and Cannabis led to an early domestication of the plant, which soon showed an amazing spectrum of possible utilizations, as a source of textile fibers, as well as narcotic and psychoactive compounds. Nowadays, the specie(s) belonging to the genus Cannabis are represented by myriads of cultivated varieties often with unstable taxonomic foundations. The pomenclature of Canada's has been the object of numerous nomenclatural treatments. Linnaeus in Species Plantarum (1753) described a single species of hemp, Cannabis sativa, whereas Lamarck (1785) proposed two species of Cannabis: C. sativa, the species largely cultivated in Western Continent, and Cannabis indica, a wild species growing in India and neighboring countries. The dilemma about the existence of the species C. indica considered distinct from C. sativa continues up to present days. Due to their prevalent economic interest, the nomenclatural treatment is particularly important as far as it concerns the cultivated varieties of Cannabis. In this context, we propose to avoid the distinction between sativa and indica, suggesting a bimodal approach; when a cultivar has been correctly established. It could be advisable to apply a nomenclature system based on the International Code of Nomenclature for Cultivated Plants

DOI 10.1007/s12229-017-9187-0

Models of Cannabis Taxonomy, Cultural Bias, and Conflicts between Scientific and Vernacular Names

John M. McPartland 1,2 · Geoffrey W. Guy 1

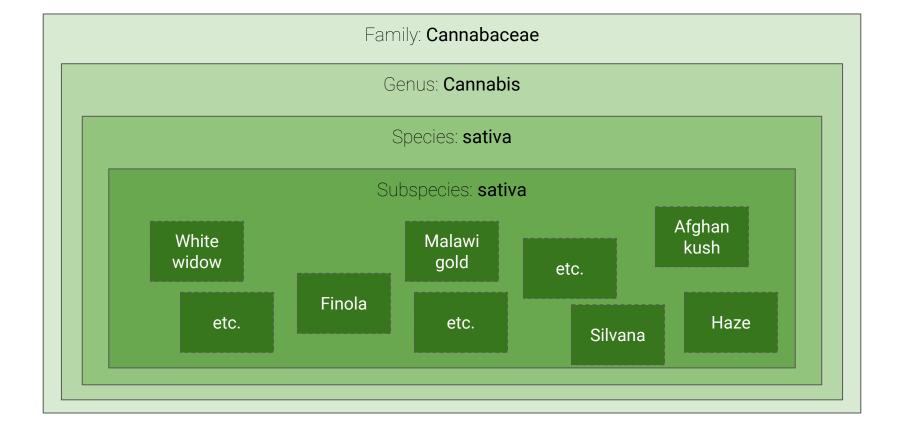
¹ GW Pharmaceuticals, Sovereign House, Histon, Cambridge CB24 9BZ, UK

² Author for Correspondence; e-mail: mcpruitt@myfairpoint.net

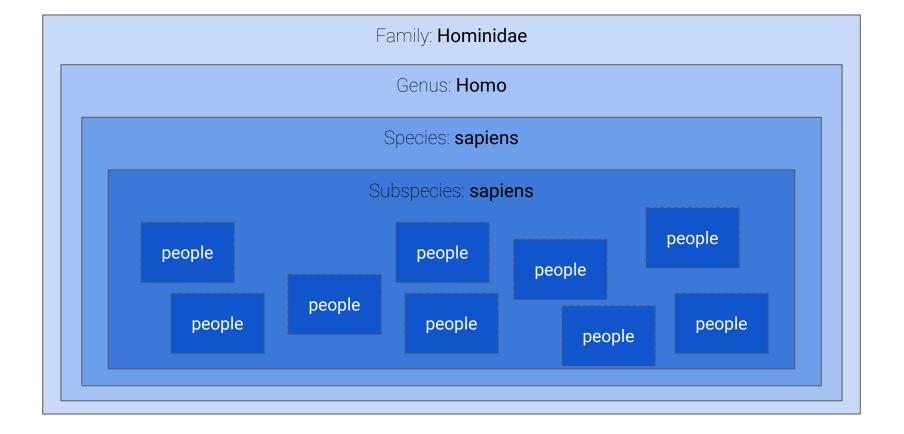
Published online: 22 June 2017

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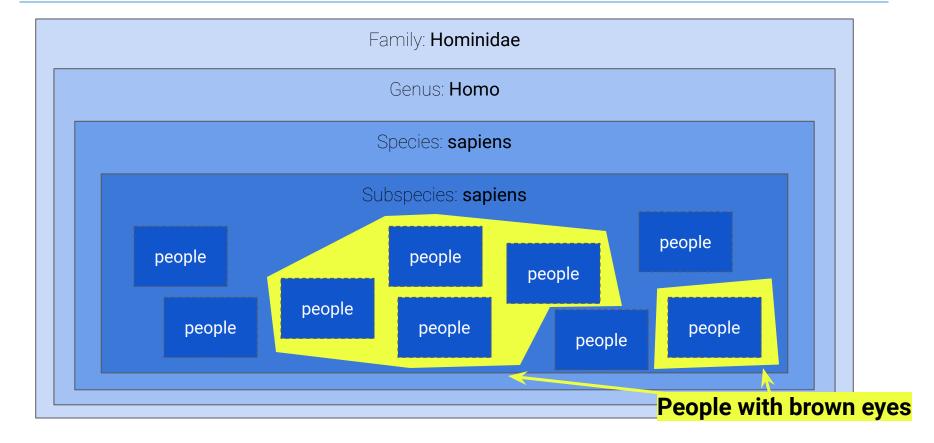










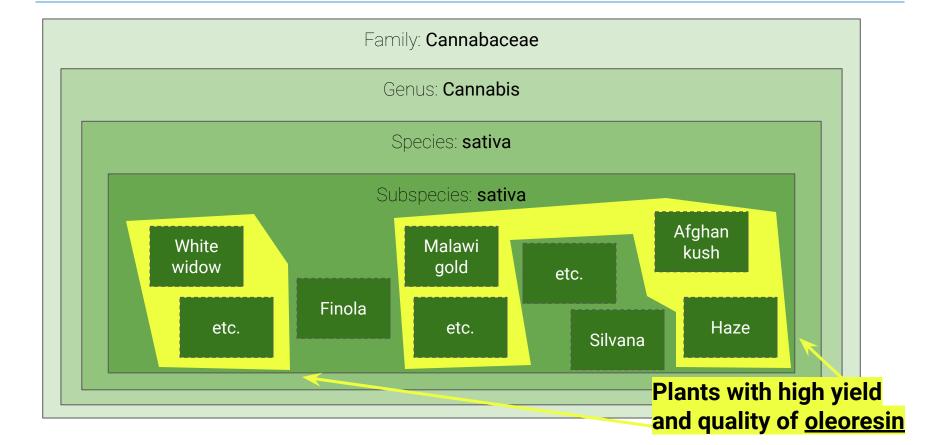


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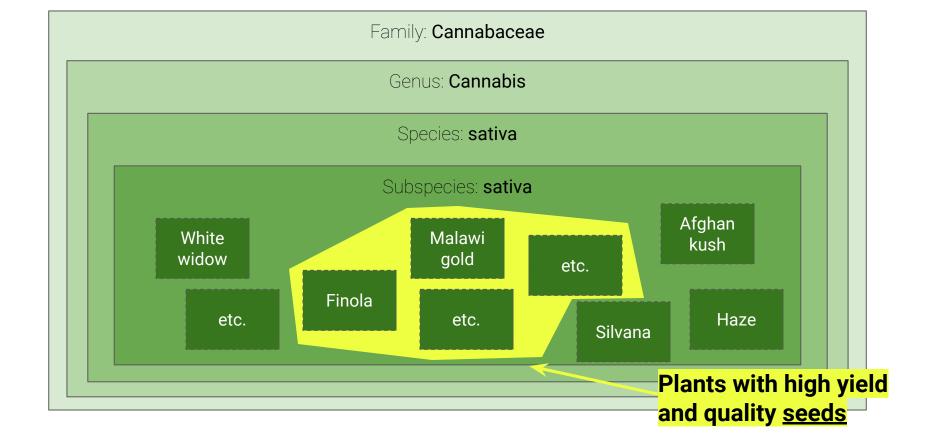
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Palais des Nations, Room XXI Kenzi Riboulet-Zemouli Geneva, Switzerland



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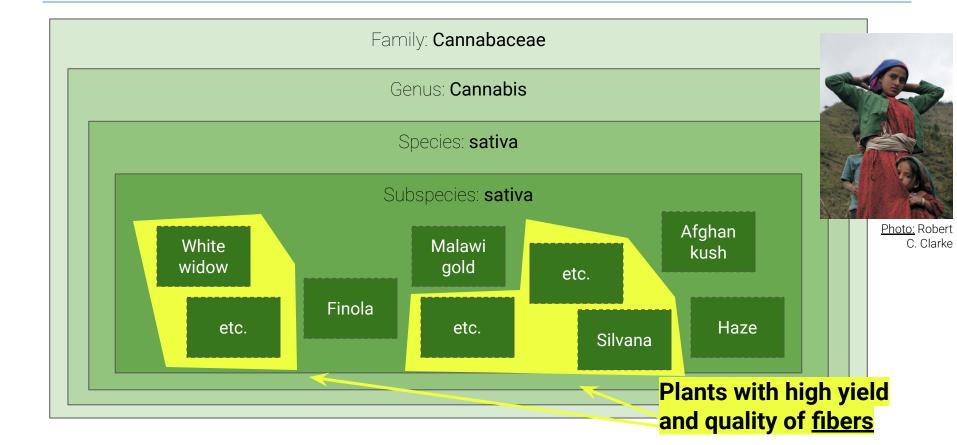
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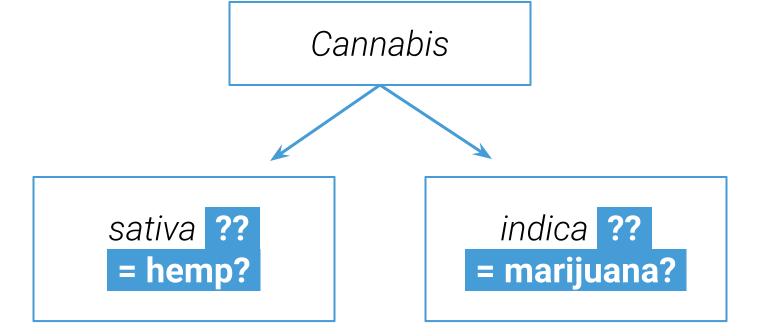


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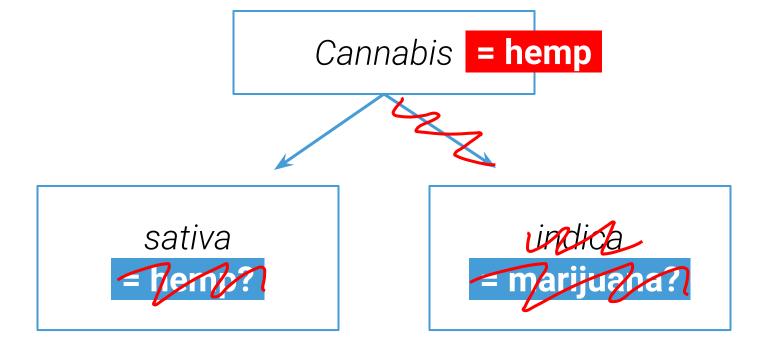
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Cannabis and Cannabinoid Research Volume 3.1, 2018 DOI: 10.1089/can.2018.0039 Cannabis and Cannabinoid Research



MINI-REVIEW

Open Access

Cannabis Systematics at the Levels of Family, Genus, and Species

John M. McPartland 1,2,*

In summary, reconciling the vernacular and formal nomenclatures: "Sativa" is really *indica*, "Indica" is actually *afghanica*, and "Ruderalis" is usually *sativa*. All three are varieties of one species, *C. sativa* L.

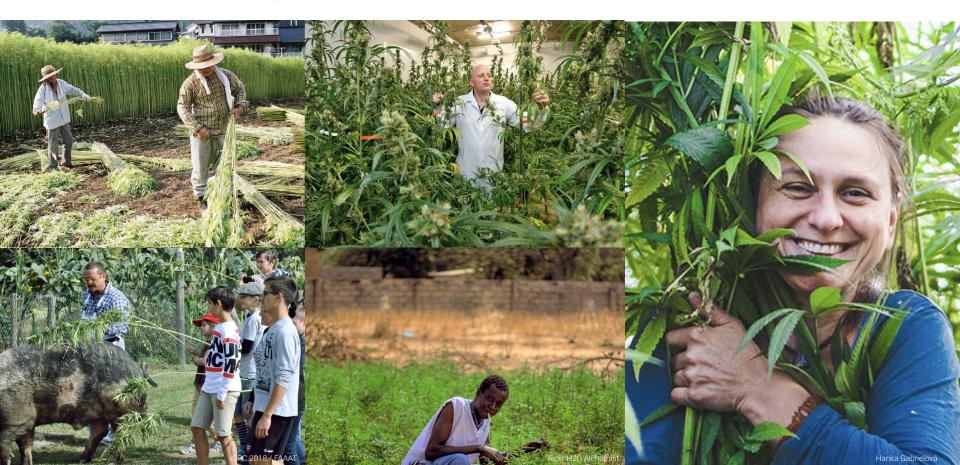


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botany: plant parts.

TOPS, LEAVES, STEM, ROOTS



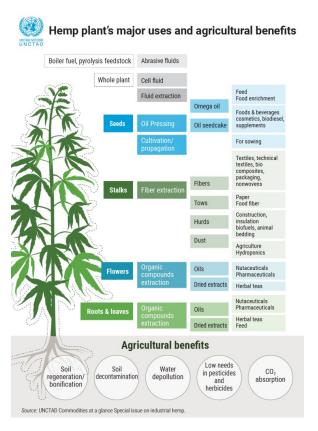
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Plant part:	Composed of:
	Flowers (or seedless fruits)
Tops [flowering and fruiting tops]	Seeds (seeded fruits)
	Leaves
	Stem
Leaves	/
Stem	(see next slide)
Roots	/
Oleoresin	Phytocannabinoids + aromatic compounds (Can be CBD-rich, can be THC-rich, can be both)



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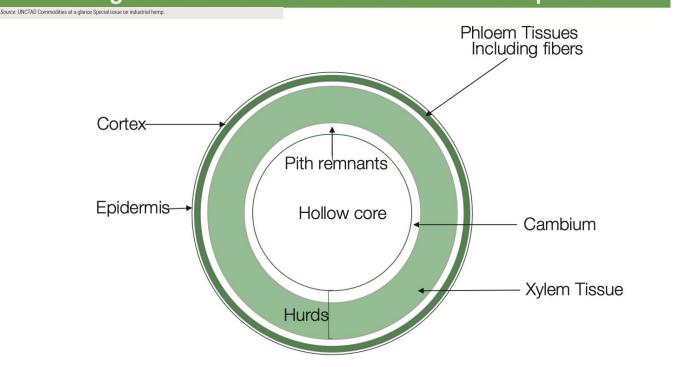
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Scaled diagram of a cross section of a mature hemp stem



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Both male & female flowers are present (dioecious or monoecious)









Seeded tops, less oleoresin

Only female flowers are present (dioecious, males have been removed)





Seedless tops, more oleoresin

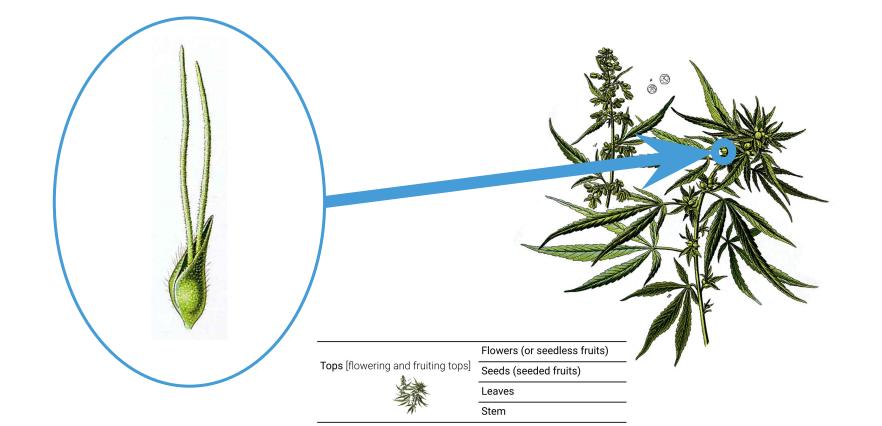


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Pistils Resin secreting hairs Calyx 2-6 mm Clarke, Robert C. (1981). Marijuana Botany: An Advanced Study. (ISBN 978-0914171782)

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CBTA type

CBLA type

CBCA type



Image: Berman, P. (2018). "A new ESI-LC/MS approach for comprehensive metabolic profiling of phytocannabinoids in Cannabis", Scientific Reports, 8:14280

CBEA type

CBNA type

Δ9-THCA type

CBGA type

Δ8-THCA type

CBDA type

CBNDA type

1. THCA synthase 2. CBDA synthase 3. CBCA synthase

4. Isomerization 5. Oxidation 6. Photochemical reaction



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Table I. Ethanol contents in various food items^a

	Mean	SD
Grape juice (g/L)		
Brand 1 (red)	0.77	± 0.05
Brand 2 (rose)	0.29	± 0.02
Brand 3 (red)	0.86	± 0.10
Apple juice (g/L)		
Brand 1	0.24	± 0.01
Brand 2	0.06	± 0.01
Brand 3	0.66	± 0.05
Brand 4	0.10	± 0.02
Brand 5	0.26	± 0.05
Mean	0.26	
Orange juice (g/L)		
Brand 1	0.72	± 0.05
Brand 2	0.73	± 0.03
Brand 3	0.30	± 0.02
Brand 4	0.16	± 0.01
Brand 5	0.20	±0.01

Malt beer (g/L)		
Brand 1	2.15	$\pm 0,2$
Brand 2	<loq< td=""><td></td></loq<>	
Brand 3	0.44	± 0.02
Vinegar (g/L)		
Vinegar (white, from wine)	2.64	± 0.09
Bread and bakery products, packed (g/100 g)		
Wheat toast	0.18	± 0.01
Wheat rolls	0.14	± 0.01
Burger rolls, American style	1.28	± 0.08
Wheat and rye bread	0.29	± 0.02
Crispbread, Scandinavian style	<loq< td=""><td></td></loq<>	
Zwieback	<loq< td=""><td></td></loq<>	
Rye bread	0.18	± 0.01
Pumpernickel, rye	0.03	± 0.01
Rye bread, traditional	0.20	± 0.01
Rye bread, organic	0.17	± 0.01
Apple pie, traditional, packed	<loq< td=""><td></td></loq<>	
Sweet milk rolls, French style	1.21	± 0.02
Mean (without burger rolls, American style)	0.22	
Bread, loose (g/100 g)		
Wheat bread	0.12	± 0.01

2 4 0Q 0Q 1 1 0Q 0Q 2 0Q	±0.01 ±0.01 ±0.01
2 4 0Q 0Q 1 1 0Q 0Q 2 0Q	±0.01
2 4 OQ OQ 1 1 OQ OQ	±0.01
22 4 OQ OQ OQ 11 OQ OQ	±0.01
2 4 OQ OQ OQ 1 1	±0.01
2 4 OQ OQ 1 1	_
2 4 OQ OQ 1 1	_
2 4 OQ OQ 1	_
2 4 OQ OQ	_
2 4 OQ OQ	_
12 14 OQ	±0.01
2	±0.01
2	±0.01
14	
	± 0.01
	± 0.01
OQ	
	OQ

^aData represent mean values (g/L or g/100 g) and standard deviations (SD) of three independent measurements/samples.



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Journal of Analytical Toxicology, Vol. 22, May/June 1998

Ethanol Content of Various Foods and Soft Drinks and their Potential for Interference with a Breath-Alcohol Test

Barry K. Logan and Sandra Distefano

Washington State Toxicology Laboratory, Department of Laboratory Medicine, University of Washington, 2203 Airport Way South, Seattle, Washington 98134

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Part II



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regulations.

HEMP & THE TREATY



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The International Drug Control Conventions

Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol

Convention on Psychotropic Substances of 1971

United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

with final acts and resolutions

⊃ 1961 'Single Convention'

"Single Convention on Narcotic Drugs, 1961" (concluded in New York) as amended by the 1972 Protocol (concluded in Geneva)

1971 Convention

"Convention on Psychotropic Substances, 1971" (concluded in Geneva)

1988 Convention

"United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances" (concluded in Vienna)



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Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol

Convention on Psychotropic Substances of 1971

United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988

with final acts and resolutions



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SINGLE CONVENTION ON NARCOTIC DRUGS, 1961

PREAMBLE

The Parties,

Concerned with the health and welfare of mankind,

Recognizing that the medical use of narcotic drugs continues to be indispensable for the relief of pain and suffering and that adequate provision must be made to ensure the availability of narcotic drugs for such purposes,

Recognizing that addiction to narcotic drugs constitutes a serious evil for the individual and is fraught with social and economic danger to mankind,

Conscious of their duty to prevent and combat this evil,

Considering that effective measures against abuse of narcotic drugs require co-ordinated and universal action,

Understanding that such universal action

ARTICLE 1

Definitions

- 1. Except where otherwise expressly indicated or where the context otherwise requires, the following definitions shall apply throughout the Convention:
- (a) "Board" means the International Narcotics Control Board.
- (b) "Cannabis" means the flowering or fruiting tops of the cannabis plant (excluding the seeds and leaves when not accompanied by the tops) from which the resin has not been extracted, by whatever name they may be designated.
- (c) "Cannabis plant" means any plant of the genus cannabis.
- (d) "Cannabis resin" means the separated resin, whether crude or purified, obtained from the cannabis plant.



Hemp: What are we discussing? Botanical characteristics and international regulations

Kenzi Riboulet-Zemouli

18 January 2023
Palais des Nations, Room XXI
Geneva, Switzerland

SINGLE CONVENTION ON NARCOTIC DRUGS, 1961

PREAMBLE

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ARTICLE 28

Control of cannabis

2. This Convention shall not apply to the cultivation of the cannabis plant exclusively for industrial purposes () bre and seed) or horticultural purposes.



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ARTICLE 28

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ARTICLE 28

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Scope and definition of the exemption covering "hemp" in the international drug control Conventions. A total exemption by purpose

October 2019

DOI: 10.13140/RG.2.2.15697.28008 Project: Cannabis: Policy & Sustainability



Scope and definition of the exemption covering "hemp" in the international drug control Conventions

A total exemption - by purpose.



bit.ly/HempAndTheTreaties

Riboulet-Zemouli (2022), High Compliance. Paris: FAAAT.



Legal analysis of Article 28 in this report, pages 54-58

ssrn.com/abstract=4057428



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In order for the exemption of hemp crops to be extended to hemp tops and hemp leaves, the following obligations apply to governments:

⊃ For hemp leaves: art. 28(3)

Prevention of any "misuse" and "illicit traffic"

- **⊃** For hemp tops: art. 2(9)
- Collect data on total Kg. of hemp tops produced.
- Prevention of any "abuse and ill effects" and reduction of risks and harms by any means.

Riboulet-Zemouli (2022), High Compliance. Paris: FAAAT.



Legal analyses of these provisions in this report

⇒ ssrn.com/abstract=4057428



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youtu.be/8u2wu6RLdgs



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World Health Organization

Health Topics >

Countries ~

Newsroom ∨

Eme

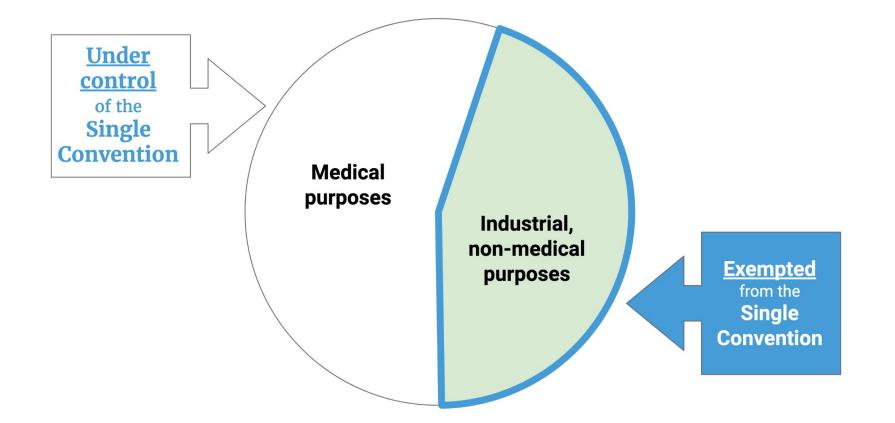
Cannabidiol is one of several (probably 200) compounds of the cannabis plant.

At its November 2017 meeting, the WHO Expert Committee on Drug Dependence (ECDD) concluded that, in its pure state, cannabidiol does not appear to have abuse potential or cause harm. As such, as CBD is not currently a scheduled substance in its own right (only as a component of cannabis extracts), current information does not justify a change in this scheduling position and does not justify scheduling of the substance.





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Workshop on industrial hemp

Hemp: What are we discussing? Botanical characteristics and international regulations

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UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

Under control of the Single Convention Medical purposes Industrial, non-medical **Exempted** purposes from the industrial hemp Single Convention

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Press and Information

Court of Justice of the European Union PRESS RELEASE No 141/20 Luxembourg, 19 November 2020

Judgment in Case C-663/18 B S and C A v Ministère public et Conseil national de l'ordre des pharmaciens

A Member State may not prohibit the marketing of cannabidiol (CBD) lawfully produced in another Member State when it is extracted from the *Cannabis sativa* plant in its entirety and not solely from its fibre and seeds

That prohibition may however be justified by the objective of protecting public health but must not go beyond what is necessary in order to attain it



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No THC. No CBD.

<u>International law ignores THC and CBD</u> as tools to measure, control, define, or otherwise address hemp; <u>it is only based on "purposes"</u> (industrial, or medical).



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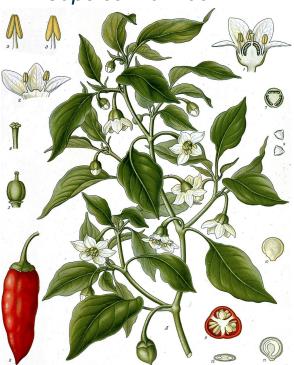
Conclusion





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Capsicum annuum L.



Capsicum annuum L.

chili pepper chile jalapeño bell pepper paprika pimiento guindilla aji capsicum

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Hemp: What are we discussing? Botanical characteristics and international regulations

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Capsicum annuum L.



What differs between "chilli" & "sweet" pepper?

(They're all the same species)

Cultivar chosen

Cultivation techniques

Climatic conditions

Harvesting moment

Post-harvest drying and processing

Workshop on industrial hemp

Hemp: What are we discussing? Botanical characteristics and international regulations

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Capsicum annuum L.



"Pimientos del padrón"



Only between 10 - 25 % of them are spicy (within a same plant/harvest batch)



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Capsicum annuum L.



Pharmaceutical ingredient (capsaicin)

Traditional remedies, herbal medicines

Cosmetic ingredient

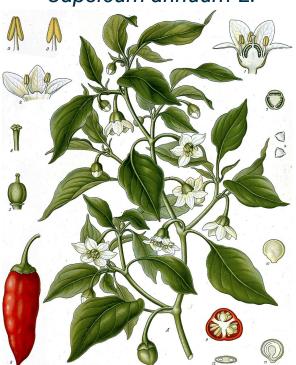
Food, spice, food complement...

Other industrial products (pepper spray...)



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Capsicum annuum L.



Pharmaceutical ingredient

Pharmacopoeias, Medicines law

Traditional remedies, herbal medicines

Cosmetic ingredient

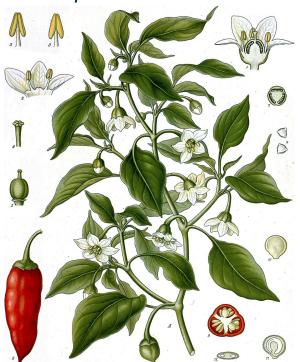
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Capsicum annuum L.



Pharmaceutical ingredient

Pharmacopoeias, Medicines law

Traditional remedies, herbal medicing

Regulations for traditional med.

Cosmetic ingredient

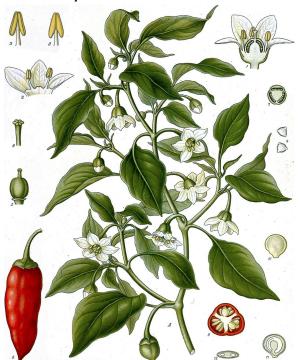
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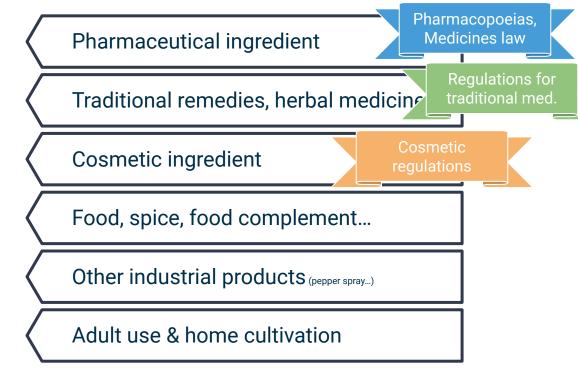
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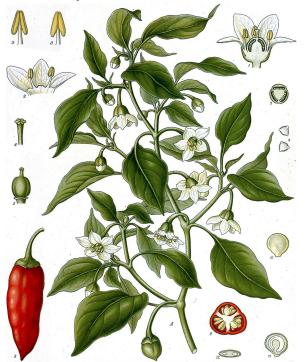
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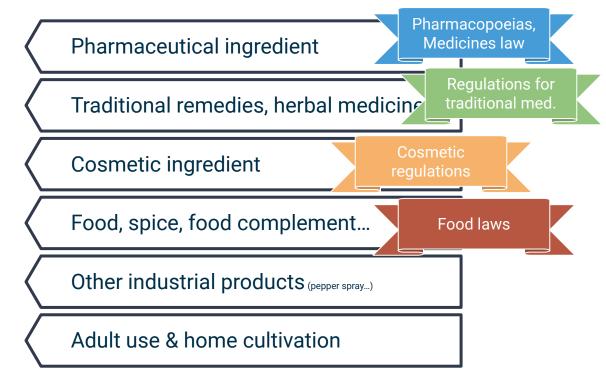


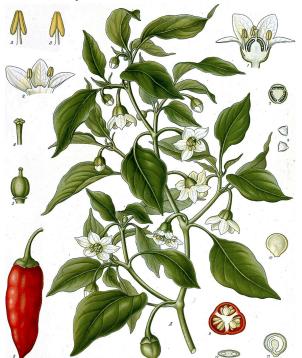


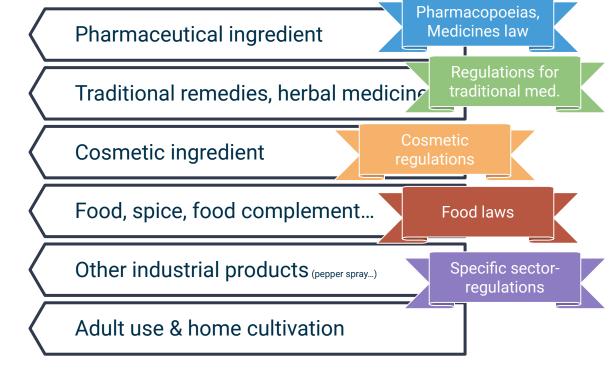


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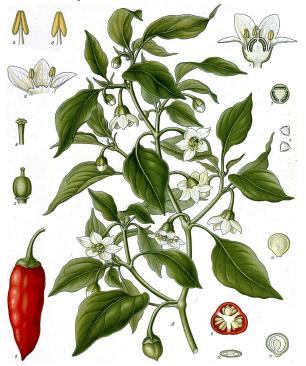


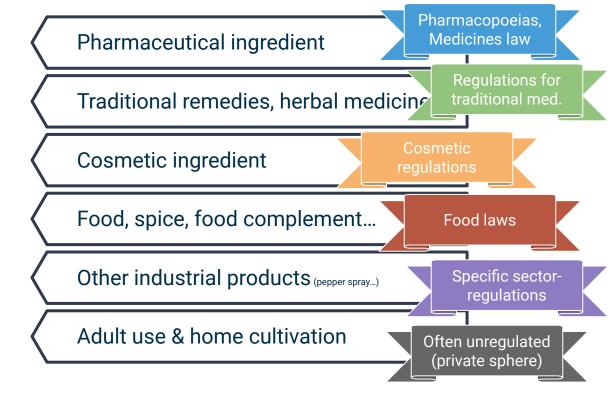




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Cannabis sativa L.



Pharmaceutical ingredients

Traditional remedies, herbal medicines

Cosmetics, wellness products

Food, spice, food complement...

Other industrial products (industrial oils, materials, fiber...)



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Cannabis sativa L.



Pharmaceutical ingredients

Traditional remedies, herbal medicines

Cosmetics, wellness products

Food, spice, food complement...

Other industrial products (industrial oils, materials, fiber...)

Adult use & home cultivation

"Medical marijuana"

"Industrial hemp"

"Recreational marijuana"

Workshop on industrial hemp

Hemp: What are we discussing? Botanical characteristics and international regulations

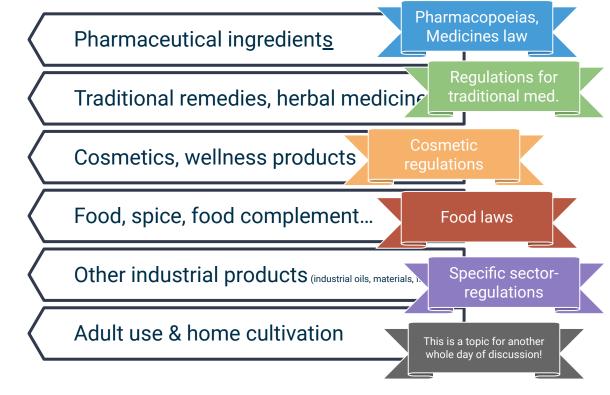
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Cannabis sativa L.







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Merci

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Contact: <u>kenzi@zemou.li</u>





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