

Historical overview of the therapeutic effect of cannabis - cannabis

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It is an ancient cultivated plant, originally grown for fibres and seed, and later also for hashish. It probably comes from Central Asia, perhaps it was known to the Chinese as early as the 28th century BC, certainly in the 9th century BC, first as a medicinal plant, a century later as a fibre plant. In Egypt, however, cannabis was not recognized until the Middle Ages, as a source of hashish. It came to Europe both north of the Black Sea and south, through Asia Minor. Herodotus mentions its knowledge among the Scythians, who knew cannabis not only as an oilseed and textile, but as a narcotic drug. They applied them in the spa - sauna. VI. Vondráček (Pharmacology of the Soul, 1935) and Zd. Klan (Narcotic Drugs, 1947) state that the narcotic properties of the drug were already known to Galen and Dioscorides, but in Galen's writings (Basel edition from 1953 (we do not find anything similar in Cannabis, similarly not in the 3rd book of Dioscorides. However, both of them knew the analgesic, forgotten by today's medicine, properties of hemp stems. Juice from it dripped into the ears for pain. Decoction of the root praised as an emolient. Galenus considered the seed to be unwholesome food, "because it produces evil moisture for the head and stomach, the genitals and excrement in man suffocate and mortify it, and women go astray when they boil the seed and serve it to drink against the god and epilepsy It also dries up milk for those who are suckling." Dioscorides, however, does not mention the harmful effect of the seed, and the ancient Czechs were familiar with cannabis porridge (Jirásek: Maryla). Medieval monasteries used a large amount of seed for soups and porridges. According to the concept of old authors, cannabis belonged to plants that warm and dry at the second level, urine dries, although elsewhere the diuretic effect has just been emphasized. According to the herbarium of Tabernaemontanus (Diacobus Theodorus Tabernaemontanus) from 1564, Galenus, Matthiolus, Ruellius and Leonardus Fuchsius have warm dampness as their nature, although Galenus attributes the opposite evil humidity to him. Hieronimus Tragus also considers them to be a drug of cold complex. it is written similarly in Matthiola's herbarium.

It is clear, however, that even in the sixteenth century hashish was not known in Europe, at least not as a drug of cannabis origin, although it is commonly stated that the knowledge of hashish came to Europe with the Crusaders. Perrot's statement is correct that hashish first came to France with the Napoleonic campaign of Egypt. However, the Orient already knew hashish from the early Middle Ages, it is said that alcohol was forbidden to the Mohammedans as a substitute for the prophet. But this treatise would grow to book proportions if everything that has to do with hashish were to be included here. We therefore leave this whole part completely aside, only where necessary to touch on this question.

In the area of southern Russia, hemp was certainly grown as early as the 7th century BC, but its culture did not penetrate Central Europe and England until the Middle Ages. It then spread all over the world, it is very adaptable, growing from 26° to 63° latitude and up to 2,000 m above sea level, in the Himalayas even up to 3000 m altitude. In 1925, 70,000 tons of hemp fiber were harvested worldwide, 3/4 of which were in the USSR. In Europe, hemp was grown very abundantly for fibers and seeds (compare a number of local names, e.g. Konopiště) and grown in various varieties, either only for densely sown fibers, or for seeds, sparsely sown, but they can be grown for both. It has never been grown for hashish here, it probably gives intoxicating substances in c), "a very good throne, which relieves stomachaches, but it is necessary to repeat." Hemp oil is recommended for both of these herbariums to clean the thickened soundproofs of the more soundy regions, although the people observed during the harvest that it was intoxicating, but it was not abused here. The hemp culture declined with the import of tropical jute, sisal and manila fibers, but today it is again spreading everywhere and rightly again, so far in Czechoslovakia and southern Slovakia. Botanically, a distinction is usually made between our cannabis: Cannabis sativa L. and hashish cannabis Cannabis indica Lam., although both are probably variants of the same species, similar to cannabis sativa and wild cannabis (Cannabis sativa L. subsp. spontanea Serebr.). One more type of this is mentioned below. P. Pulevka (ref. in Die Pharmazie 1951, 183) examined 369 samples of cannabis in southwestern Anatolia and found that the formation of intoxicants does not depend on the species, but on the habitat and climate during the growing season, depends mainly on temperature, drought and sun, and the content of intoxicants - probably mainly tetrahydrocannabinols - can vary from 0 to a high degree. H. Gayer (Ach. f. exper. Path. at. Pharm 129, 312 / 1928 / considers cannabis of the tropics and temperate zones to be one species. Interesting data on the plant are also provided by S. Dontas and P. Zis (Arch. internat. de Pharmacodyn. et de Thérap. 35, 30 / 1928 /).

Cultural very numerous forms of cannabis are divided into three groups: northern, central Russian and southern with a number of other subspecies. Northern hemp is low and leaves are only three-petaled and small seed, with a very short growing season of 50 - 80 days. The southern one is up to 4.5 m tall, the leaves are 9 - 11 numerous, the seed is up to twice as large as in the northern one, but the vegetation period is up to twice as long. Hashish cannabis is strongly branched, from the first internodia, it is lower and gives only the wrong fiber. It has leaves with narrow lobes and shiny seeds. We also have varieties that are ripening at the same time, as cannabis is dioecious and male flowers mature earlier. Hemp is also grown today, bearing both flowers on one plant. To distinguish all these species, varieties, sorts and types, the length of plants and the growing season are mainly important. Secondary features - and very variable ones - are also the size, shape and colour of the seeds, the constriction of the inflorescence, the size, number and width of the leaf lobes, branching, the strength and shape of the stems and the length of the internodes. and, of course, the quality of the fiber. However, this varies according to nutrients, density of sowing, water supply, etc. Unbranched plants are preferable for the fibres and the male plant, called cannabis pokonné (called Fimmel in Germany, Bessnitz in some places), has a finer fibre than the female - hemp head. For hashish and seed, and of course for antibiotics, branched cannabis, with a predominance of head-shaped plants, is more advantageous. However, as mentioned, cannabis with both flowers has already been grown. It is interesting that the ancients referred to male plants as those that had seed. In the south, it is advantageous to grow hemp for seed, in the north for fiber, in the subtropics for hashish.

Overall, hemp is more of a thermophilic plant, but Nordic varieties reach even higher north than flax due to the shortness of the growing season.

The seed germinates very well, germinating in 50% of the seeds in the third year. The plant is annual, sown in spring, it is possible to sow quite late, especially if it is not a matter of ripening seeds. These ripen even after harvest in bundles. However, we have had very good experience with antibiotic cannabis, even with autumn sowing. Growth, or germination, depends a lot on temperature, in warm weather they germinate in a week, if it is cold, the plants do not germinate and do not grow. They can tolerate even quite strong spring frosts, down to -4° C; and in Velké Losiny, even stronger frosts did not harm them. Hemp culture is very advantageous, although it needs good fertilization, but not a lot of weeding, at most at the beginning, on the contrary, it will kill the weeds itself as soon as they grow and can be used to weed the fields. It improves the quality of the soil, especially by waste, well-rotting leaves and the greenhouse microclimate between its tall stems, it is very resistant to pests (antibiotics) and it is very suitable to grow them as a catch crop for seed, especially between cabbage and kale, it repels whites. It is an excellent preculture for very demanding crops. It is claimed that it prevents the effect of phytopathogenic late blight of potatoes if sown between them.

Hemp has long taproots and can draw water from great depths, it already needs 250 - 300 mm of water precipitation per year. In the Czech Republic, a morning (0.57 ha) per cent of harvest yields, in Italy 6 q and in Brittany up to 74 q. (The purchase price is currently around 40 - 50 Kčs for 100 kg of stems and 4 Kčs for 1 kg of seed.) 100 kg of hemp fibres can be obtained from 725 q of stems. When growing per seed, about 10% of the whole plant is per seed, a little more per root, the stem is the most, around 60%, the leaves are 20%.

Hemp culture is particularly well suited for drained peat soils, it maintains a well-suited soil structure.

Hemp fibre excels in great strength, which is necessary for ropes and ropes, but also for strong tarpaulins, sacks, etc., and finer fibres pure or mixed with linen or cotton, also for good linen. Modern cottonization methods greatly expand its use. Today, it is also possible to make cloth goods from hemp fibers. Hemp tow is important as a pipe seal, also for cleaning machines, locomotives, etc. Hemp hurd can be used to make insulation boards, building materials, it can be used for heating (it has about 3,670 calories), it can be very easily saccharified, it gives 60% sugar and 20% pentosan. Finally, the pectin matter between the fibers could perhaps be used in other methods of obtaining the fiber than by urination (soaking). Hurd can also be used for the production of paper and rayon. The book M . *Peliščuk and A. Hadinec: Flax and Hemp* (Textile and Clothing Industry Library, Prague 1952) will tell you more about all this. In the past, coal was also made from the remains of stems and stumps, which was said to be especially good for gunpowder.

Allergic fevers and asthma can occur during the processing of hemp, as well as flax (*Hechel Fieber*), but it seems that fungi and microbes acting together during soaking are more important here than the actual substances from the cannabis. Incidentally, similar disturbances arise in a whole series of other agricultural

work, e.g., in the harvesting of asparagus, garlic, beans, vanilla, orange, lemons, tangerines, peppers, coffee, tea, tomatoes, dahlia roots, oats, corn, sawdust, pine and fir trees, and brain disorders may also occur. However, skin changes, such as in rue, celery, parsley, etc., have not been observed in cannabis.

Leaves, which account for up to 20% of the harvest, can be used as manure with 5 - 6% N, mainly because they decompose well in the soil. The root once served as a medicinal drug.

The seed was, as I said, a favorite food. In her Czech Folk Diet, Úlehlová-Tilschová mentions hemp soups (seed soup) as well as porridge and other dishes. The medicinal uses are listed below. The seed contains 25 - 34 % fats and 22 - 25 % digestible proteins. Oil, like linseed oil, is fast-drying, iodine number 143, with a pleasantly sweet taste, reminiscent of olive oil. It is suitable for canned fish, for confectionery and margarine, but also for the production of varnish and therefore varnishes and linoleum. Today, the seed is known to people mostly as canary privet, but it is also important, as we will see below, as human nutrition. The seed also contains choline and trigoneline, then phytin, which used to be tested in tuberculosis and anemia. Other substances, namely the richness of ferments in the seed, are discussed below. Phytosterols may also be interesting, perhaps with the properties of sexual hormones and the properties of substances in the unsaponifiable fraction of the oil, where we can probably look for a sexual-hormonal effect.

After the oil is squeezed out, the remaining cake still has about 5 - 7 % fat and 25 - 30 % protein and is a very valuable feed.

*Read B. E. Chinese medical plants from the Pen Tsao Kang Mu A. D. 1596 (1936) states 19 % protein, 31 % fat, 5 % ash in the seed and then: choline, lecithin, phytosterol, edestin, phytin, trigonelin, inosite, linolenic and glucuronic acid. and vitamin E. In the leaf 0.2 % carotene, bitter, Ca-malate, essential oil. In flower tops, cannabinoid, resin, fat, wax, choline, essential oil and 15% ash. He refers to two Chinese varieties of cannabis as Cannabis sativa L. and C. chinensis Del. Fr. Novák in his *Pharmaceutical Botany* (1950) states the amount of fat in the seeds as 30%, according to him Fructus cannabis (sativa L.) is still used in medicine here and there, also Summitates Cannabis (sativae var. indicae Lamark), especially containing a lot of resinous substance, are still official somewhere. Novák recognizes two species: C. sativa L. and wild cannabis, C. ruderalis Jenišovský, growing in Altai.*

The healing effect of the seed was newly recognized in our country by J. Šírek and included it in the healing nutrition of pulmonary and tuberculosis. The above-quoted herbarium of Tabernaemontanus states, according to Galen, that the seed is harmful to the head and stomach and is difficult to digest. A lot depends on the preparation. According to Paul Aeginet, it dries and disperses the winds, dampens sexus (hashish just the opposite). Seed boiled in milk and drunk warm suppresses and drives away dry wheezing cough. It increases the fertility of hens that they bear even in winter. The seed, washed and boiled in white wine until it bursts, then ground into a milky emulsion and filtered, yields, according to Joachim Kramerarius (this *Herbarium by Matthiol* translated into Czech by Adam Huber of Ryznbach and Daniel Adam of Weleslavín (1596), "a very good throne, which relieves stomachaches, but it must be repeated." Hemp oil is then recommended by both of these herbaria to clean the congested ear canal and to dispel hardened swellings - cold hard swellings. Put in the ear and in chron. otitis and also juice from the unripe seed for sore ears.

According to Dinand (see below), 3 - 4 spoonfuls of seed mashed and boiled with 1 liter of milk and drunk during the day are a good remedy against jaundice, relax the liver and also tame pollutants. The decoction in wine is then diuretic.

On the use of a decoction of the root as an external emollient for gout and joint swelling, both authors repeat Galen's findings. Interesting is the other therapeutic use, quite identical in both cases, where it is clear that the analgesic effect is applied, and the antibiotic effect that we have rediscovered on the other.

Both of these authors state that the leaves and juice of the plant drive out worms, especially in horses. And similarly, earthworms from the ground, which fishermen take advantage of to get bait without digging. This and also the beneficial effect of the seed on the carrying capacity of hens is also known by Peter Crescentius in his agricultural "Know-It-All": *New Feldt und Ackerbau 1583*. It is interesting that otherwise he knows cannabis only as a fibre plant and also knows nothing about hashish. Tabernaemontanus and Kramerarius advise to apply fresh cannabis leaves to burns and not to let them dry out, and even better: pound the cannabis in a mortar and make an ointment with butter (we know today that butter has effects similar to azulene, anti-inflammatory). Thus, both analgesic and antibiotic effects come into play here. According to

Ruellio, the juice of the plant is good in the ear for pain relief and treatment of otitis, similar to the above with cannabis oil. The juice is also good for wounds and ulcers. Women from a rotten mother to the ground fallen (bent) will rise again (straighten up) when the lit cannabis sticks to their noses. Against the incision (cystitis), he advises to boil about 3 tops of cannabis in a mixture of wine and water and let the steam from the decoction flow as hot as it can be carried against the wedge (perineum), then release the water. It is interesting that this indication, i.e. the use of Cannabis, but internally, in cystitis is especially emphasized today by homoeopaths (Madaus). Homoeopaths have Teep (fresh cannabis rubbed with lactose), namely D2, tablets of 0.25 g, taken every 2 hours, one tablet 3-4 times a day. First, a tincture of Cannabis indica, which is taken in D3 to D4 and these drugs are considered to be particularly effective for cystitis and urethritis.

Dinand states this prescription for cistitis. 15 g each of crushed laurel leaves, nettle and calamus, 30 g each of mashed juniper berries, seeds, rosemary, licorice, blackcurrant berry peels, parsley root and 10 g of saffron are boiled in four litres of water and thickened to two litres. It strains. It is taken daily 4-5 tablespoons before breakfast, lunch and dinner.

The smell of cannabis is unpleasant for some people, pleasant to others, repels, as mentioned above, whites. However, bees like to collect pel. But they did not take the hemp extract as a medicine in honey. In the XVI century, hemp was hung in bedrooms to ward off insects, especially mosquitoes.

In today's medicine, the tincture from the tops of female plants Cannabis indica is used only internally and mainly the hashish effect is applied here. A great deal of literature on this can be found in *the Compendium der wissenschaftlichen und praktischen Homöopathie* by H. Schloeler (1951). On the basis of the picture of hashish intoxication and the burning sensation in the urethra in chronic hashish eusators and their ocular changes, the relevant small doses of the tincture are tested in paralys, delirium tremens, schizophrenia, catatonia, hebephrenia, migraine and sclerosis multiplex, asthma codiale, stenocardia, scrofulous ocular changes, and especially in cystitis and migrainena A. P. Dinand (*Handbuch der Heilpflanzenkunde, 1926*) is mentioned as a North American pharmacist. The following migraine treatment is highly recommended in the magazine: Conscientiously for 14 days daily before meals take 1.5 ctg of hashish cannabis extract, then 2 ctg for 14 days, 3 ctg at the end of the 4th week, continue for several months. Perhaps in cystitis, its antibiotic effect will also be applied. In allopathic medicine, Cannabis is an almost unknown medicine today. Even in the salicylic corn carol, Extr. Cannabis adds, which is very useful for both analgesic and antibiotic effects.

In Hegi's fundamental work on Central European flora (Vol. II, p. 133), Dr. Krejčí found a mention that cannabis has already been used analgesically in dentistry and the works further in this file of ours fully confirm this pain-relieving effect. Similarly, I found in the list of drugs of the large English pharmaceutical company Burroughs Wellcome & Comp. the specialty Cannabine Tannate, an effective sedative, where the remedy was recommended - combined with groin, Canadian watercress and ergot - against metrorrhagia and dysmenorrhoea. However, it seems that this is a medicinal use of hashish, which has been tried many times before, but abandoned due to the inconsistency of the effect of imported hashish.

From Dr. r. Kohler I have a recipe for tinnitus: ZnO, extr. Valerianae, extr. Hyoscyami, extr. Cannabis and 1,6, make 60 pills. Dr. Bradna then observed that after the seed, the experimental small animals multiply well, which agrees with the old observation about the effect of the seed on the carrying capacity of hens, and perhaps contradicts Galen's data. However, this is also explainable if Galen is engaged in sexual activity by a man, as is likely, and there are female hormones in the seed. otherwise, only Dr. Sírek actually uses semen in milk for the treatment of pulmonary tuberculosis (*Rozhledy v tbc - appendices ses. 5 - 6 X. 1950*) H. Thaa (Pharm. 1953, 262) states that the drug also contains choline. Choline is considered to be an effective uterotonic agent, it is interpreted as the healing power of goose cinquefoil (*Potentilla anserina* L.) in female diseases. (Perrot and Klein also mention trigonelin for cannabis) and it could perhaps be used to treat stomach ulcers. Gastralgia, as indications for internal use of hashish, are also mentioned by A. Richaud and R. hazard (*Précis de Thérapeutique et de Pharmacologie, 1943*). Tincture (max. dose 1 g per day) and extract (max. dose 0.1 g per day) are used here. Previously, "Cannabis" was combined with the groin, probably it is purposeful. In Dragendorff's case, there are other indications for cannabis: in addition to migraine, intestinal catarrh and respiratory tract, cholera and uterine disease. In nervous diseases, however, the use of hashish has failed, which is based on the great inconsistency of the drug, on the maximum fluctuating toxicity, and on the other hand on the very unequal individual reactivity. Depending on the origin, the method of harvesting and certainly the annual climate, there are definitely far fewer narcotics here than

in the warm zone. Orientals may react differently than a white man, and the reaction is different according to the immediate mood of the hashish eater. It is said that hashish actually only exaggerates the mood and therefore a pleasant result is only for those who are in a good, calm mood. On the contrary, from the states of unpleasant hashish, only anxiety exaggerates. It is an intoxication of the well-being of listeners and storytellers of the Arabian Nights, and for a European who is looking for the oblivion of woes, it is therefore not a suitable intoxicating drug, and also in Europe the use of hashish, whether per os or by smoking (exceptionally hashish is also snorted somewhere), has never spread, but in the southern states of the USA and South America smoking marijuana, As hashish is called here, it becomes a social threat.

This danger of marijuana for Latin America is discussed in a book by Argentine author Pablo Osvaldo Wolff. (Ref. JAMA 193, 212 / 1950/). In India, hashish was also used to intoxicate the victim during robbery (perhaps hence the name assassin). According to Castellani and Chalmers (*Manual of trop. Medicine, 2nd ed.*) in India, hashish causes 40% madness and often amoks.

Hashish itself bears many names even in one country. Many names in particular are listed in G. Dragendorff's book: *Die Heilpflanzen 1898*. In India, they recognize various preparations. (*Em. Perrot: Matieres premieres usuuelles du régime végétal. 1944*) "Bhang" are leaves, they are mainly used for smoking and are the weakest. "Gunjah, ganja or guaza" are shoots compressed either by treading (Flat-ganja) or by hands (Round-ganja) or coarse dust (Chur-ganja or rora). This form is by far the richest in resin. Only bhang and flat-ganja came to Europe. Pure almost resin, called "charas or chira", comes from Central Asia, Afghanistan and Persia, it is obtained by hand from female shoots before fertilization or by foraging through plantations in leather suits and the resin caught on clothing is wiped off. It is the most effective preparation and is not usually consumed pure, but is used to prepare beverages, sweets and mixtures with flour, sugar, honey, cinnamon, cloves, nutmeg, opium, durman, strychnine seeds and cantharides, so that the effect is modified and potentiated. Other common names for hashish are kif - in North Africa, or diamba - in Liberia, Congo, Brazil.

The content and chemical analysis of the resin drug obtained in our country will be presented in the next part. The history of analytical work is given in Dragendorff. The main substance effective in hashish is considered to be nitrogen-free phenol with 2 six-membered nuclei, called kannabinol and found only in Indian cannabis in the subtropics, it is lost during the cultivation of this type in our regions. How far it is related to the analgesic and antibiotic properties of our cannabis will be mentioned in the chemical section, as well as other substances found here. However, it is certain that it is not the only intoxicating substance in hashish. Beam's reaction is to detect this substance and determine Indian cannabis as follows: According to this reaction, the petroleum ether extract of the shoot gives a purple color with an alcoholic solution of NaOH. But the reaction is not specific. Here we list other substances in cannabis, if they are known: In the Handbuch d. Pflanzenanalyse (G. Klein, 1932) we find in the seeds the same substances as stated by Read, in addition to alphalimonene and traces of muscarine. The seed is particularly rich in globulin-edestin, and it is for its production that the seed is taken. Šírek's medicine from the seed also bore the name "Edestan". In Klein's handbook IV. vol. 340 pp. (M. Bergmann and L. Zervan) we find the composition of edestine: Glycol 3.8 %, alanine 3.6 %, valine 6.2 %, leucine 14.2 %, phenylalanine 2.4 %, tyrosine 2.1 %, acid. Aspartic acid 4.5%, glutamic acid 14.5%, arginine 15.8%, histidine 4.0% (there are particularly large differences between different authors), lysine 3.9%, proline 1.7%, ammonia 2.3%, serine and three thioamino acids are missing.

More recently, however, O. Folin and A.D. Marenzi state that tyrosine is 4.28%, tryptophan 1.5%, phenylalanine 3.92% - and what is especially important - these amino acids are one of the first to cleavage, so edestin is one of the best proteins - donors of these important amino acids, namely tryptophan, provitamin to niacin. There is also -, 5% cystine and 2.07% methiotin, egg white 0.2% and edestin together with the protein of some nuts, e.g. hazelnuts or Brazil nuts, a really perfect vegetable protein, not soy, as is generally stated. It is an excellent nutrient for bacteria and edestin inhibits their growth, like casein, and when it is isolated, toluol must prevent as much activity as possible Like other plant globulins, it dissolves only in higher concentrations of salt (10 %), also in hot physiological solution, but in cold it emerges from it, usually in crystalline form. It is isolated from the seed of crushed atauk deprived of petroleum ether, then it is expelled by 10% Na Cl, during which it is necessary to alkalize the solution with BaCO₃ to a faint pink color to phenolphthalein. It is removed from the extract by dialysis (it still needs to be protected from bacteria with toluol) or by dilution with desilobated water to a salt concentration of 3%. From 1000 g of defatted seed flour, 100 - 125 g of edestin can be obtained. Pure has an isoelectric point at pH 5.6 (Globulin sera below 5.1 gelatine, casein, albumin sera and eggs between 5.5 - 6.0, haemoglobin at 6.8 and gliadin at

9.2). In edestin, as in plant globulins in general, there is the most species-specific antigenic structure of all plant proteins, but there is no P, although phosphates are otherwise quite abundant in the seed, since there is also lecithin.

Below we present the content of the most important amionic acids in edestin compared to other proteins important for growth. Arginine is included for its growth-promoting importance. As is known, it is particularly abundant in bull semen, thymus histones have 15% of it and salmin even 89%. Lysine is then considered to be particularly important in the treatment of tuberculosis.

Protein	Tryptofan	Tyrosine	Phenylalanine	Methionine	Arginine	Lysine
Edestin	1,5	4,3	3,9	2,1	14	3,8
Lactalbumin	2	3,4	4,8	3,0	3	7,9
Casein	1,2	5,2	3,9	3,5	5	6,9
Ovalbumin	1,5	3,7	5,1	4,5	6	5
Gliadin pšenice	0,8 - 1,1	1,2 - 3,3	2,4	-	3,2 - 5,7	0,7 - 0,9
Soy	0,8	2,1	2,9	2	3,3	3
Gelatin	0	0	2,6	1	9,1	4,6

The seed also contains asparagine and glutamine, choline and trigonelin and, during germination, temporarily urea and a huge wealth of ferments. (Ibid., Vol. IV. C. Wehmer and M. Hadder): catalase, amylase, emulsin, maltase, tryptase, pepsin, trypsin, erepsin, lipasa, urease, nuclease, allantoinase, linamarasa (limasa).

Pentosans found in the stem give l-xylose, there is also d-galactose and acid. galacturon. The microincineration of the leaf gives a characteristic picture.

Ethanol can be detected in distillation water. In the whole plant there is an unknown paraffin C₂₈H₅₈ or C₂₉H₆₀ with b. t. 63.5 - 64°C, terpene with b. v. 170 - 180°C and after flowering sesquiterpene C₁₅H₂₄ with b. v. 258 - 259°C, this especially in essential oil. Then there is cannaben C₁₂H₂₀, a still unknown, probably sesquiterpene and paraffin (?) called cannabinhydrate C₁₂H₂₄. The alkaloids cannabinoid and tetanocannabinin, supposedly nicotine bases, are now in question.

On cannabinol, which is considered to be the main, though not the only carrier of the intoxicating effect, and on the antibiotic substances proper, as mentioned above, will be dealt with separately.

The Arabs, who took hashish from the Indians or Persians, gave it the name used in our country and spread it throughout the Arab medieval world in the early days of Islam, became the originators of the French word "assassin", brought to France by the Crusaders. According to one version, because it was used to eliminate inconvenient people, according to the other version, because hashish was used to infuriate Islamic fighters in battle. It is said that the young men of Islam were intoxicated with hashish, carried in their sleep to a beautiful garden with delicacies, beautiful girls, and after a second intoxication returned to normal life and then told that they had seen the heaven of Allah, where they would surely reach if they fell in the fight against the infidels.

Perhaps hashish was said to be Homer's "nepenthes". But it seems that it was more about the Egyptian henbane - Hyoscyamus muticus, because Homer states that this drink of oblivion was prepared by Helen according to Egyptian knowledge and cannabis was not known in Egypt until the early Middle Ages. It was hardly opium, Homer would have stated that directly, for the effect of the poppy was well known to the ancient Greeks.

The visions of hashish are described in the books by Vondráček and Klan, the hashish motif has been treated many times in poems and belles-lettres as well as in toxicological and medical, especially psychiatric, and we refer to the two monographs in this regard.

We also recognize here that Dragendorff mentions "Cannabis silvestris" as a secondary name for the North American *Galeopsis tetrahit* (cannabis). I do not know to what extent this name and the Czech name are related to the fibre or medicinal property of this herb growing in our country. Perhaps similar in that the seeds serve as privet for birds and contain fine oil.

Folk indications for cannabis, both shoot tips and seed, are very wide. A 1:10 seed emulsion, called hemp milk, was used for gonorrhoea. This indication is also very widespread in Argentina. Here this milk is used against catarrhs of the bladder and also against jaundice. Seed porridge is also known to blacks of the South African Suto tribe, they also give it to infants. A decoction of seeds and plants is also given to maniacs, it is supposed to be somewhat diuretic and alleviates inflammatory changes. Thus, there is a use of both the seed and the drug in cystitis and urethritis similar to that in old herbaria and homoeopaths. But it contradicts Galen's data. Oil in Argentina also used internally against Saturnism, in breast compresses against excessive milk secretion. After all, both semen and drugs are almost panacea in Argentina: tetanus, melancholy, colic, constipation, swollen liver, stomach pain, gonorrhoea, sterility, impotence, asthma, abortion and lung tuberculosis. Apparently in many cases incorrectly, e.g. in the case of constipation. In the Middle Ages, cannabis decoction was given against cattle diarrhoea. Rather than seed, however, an extract is given, in a dose of 1 - 2 drops. The oil was also applied externally to cancer, even in Europe. For Indian cannabis, the bark from the roots is also recommended as a febrifuge and tonic, against stomach pain and dysentery. It is taken fresh directly or in a decoction, mainly from spring roots. Even the seeds work that way. The root, deprived of bitterness, is said to be eaten as a starchy food (?). Fresh crushed roots are also applied to burns, they tame pain (Dinand).

However, the main medicinal use in folk medicine is the female flower tops, less male and the leaves. The most effective are extracts with fat, e.g. obtained with butter. This »*Extr. Cannabis ind. pingue*« intoxicates like hashish, even at 0.1 g. It was also said to have been prescribed by the basedow. The latter is an ether extract against headaches, neuralgia, gout, rheumatism,¹ chorea, melancholy, delirium, hysteria, gastralgias² and loss of appetite. The water extract is not intoxicating at all, it is used for constipation (?), pulmonary tuberculosis and even as a sleeping agent for children. In Argentina, leaf infusum is considered diuretic and perspiratory. Crushed leaves as cataplasma on furuncles. In northern Brazil, cannabis leaves - diamba - smoked from hookahs, which was brought here from Africa. They are then used as a sedative and hypnotic medicine, also against asthma. Externally, whole plants are recommended in our country for poultices for inflammations and in vinegar together with juniper for head compresses for fever. An explicitly antibiotic folk use is given by Dinand: Cannabis tincture on erysipelas externally.

- Against rheumatism, a decoction of leaves (15 - 20 g in 0.5 l of water) is used internally, compresses of seed mash externally and also wraps in hemp shives or tow. Seed mash is also applied externally to erysipelas.
- For nervous gastralgia, Graemer gives the following prescription: 0.75 g *Extr. Cannabis indica*, 10 g ether, 10 drops per day for wet sugar.

However, African strains have particularly interesting indications for cannabis. Here in South Africa, it often bears the same name "dagga" with *Leonotis leonorus*, and both are used as analgesics, sedatives and antibiotics. (T. S. Githens: *Drug Plants of Africa* - Philadelphia 1949. (J. M. Watt and M. G. Breyer-Brandwijk: *The medical and poisonous plants of Southern Africa*. Edinburgh 1932) describe antibiotic use in Southern Rhodesia against malaria and haemoglobinuria, sepsis, anthrax and dysentery. In Xosa strains, for the treatment of hoof inflammation. In the Fingo tribes, the leaves are used against snake bites, and in the Suto tribe, women smoke cannabis to dull the pain of childbirth. Otherwise, throughout Africa, hashish is generally smoked as a narcotic and intoxicating drug.

Cannabis is the subject of many superstitions. For example, P. Sobotka states that on St. John the Baptist there were girls lying in it. If cannabis rose, they married within a year. They must have been very careful in doing so, broken cannabis does not straighten up so easily.

If we overlook the main indications, we see that here everywhere in folk medicine and among primitives I know the analgesic and antibiotic effect of cannabis, then the effect on the genitourinary system, which was known even to ancient doctors and which official medicine has forgotten, to the detriment of the sick.

SUMMARY

An overview of indications of cannabis - hemp tops and seeds - from old herbaria, folk medicine and today's official medicine is given, if the remnants of the use of Extr. cannabis. It is noted that the ancients used the antibiotic and analgesic effects of cannabis in particular, which today's medicine has forgotten. The hashish effect of cannabis will not be discussed in these works, if only because our cannabis does not have narcotic effects. Hashish was not known in Europe until after Napoleon's campaign in Egypt and was always imported.

Note. So far we have not been able to read and include in this review 2 works by Fr. Auster and J. Schäfer: *Arzennpflanzen*. Lief. 7. 1995 and article (authors not mentioned in ref.) and *Apotheker Ztg.* 1949 61 (1), p. 42. Cannabis, The Harzgehalt and the physiol. Wirksamkeit des einheimischen Hanfes. Other literature is listed directly in the text.