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HEMP/CANNABIS

The Cannabis plant's parts and its therapeutically aspects

This paper aims to introduce Cannabis as it is known today and to screen some of the researches done on the Cannabis parts and effects with relation to their therapeutical power.

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Growing Cannabis - History

The medical Cannabis plant has thousands of years of use in ancient China, India, and Egypt. It goes back and the fact of applications collected by Archeologists to the 14th century. " In the middle of the 20th century, international coordination led to sweeping restrictions on cannabis throughout most of the globe. In the 21st century, some nations began to change their approaches to cannabis, with measures taken to decriminalize cannabis, the Netherlands became the first nation to legalize cannabis, and in 2015 Uruguay became the first to legalize recreational cannabis with Canada following in 2018 and South Africa for personal home use only".¹

Ireland has approved the use of medical cannabis, and will also participate in its public health insurance costs as is done with other drugs. The Cannabis may import from Denmark.

²In the Academic studies, Israel is moving and leads forward, and an Academic Diploma available in the area of Cannabis. In recent years, medical cannabis has been gaining momentum in Israel and around the world, attracting interest in research, medicine, industry, and technological and business entrepreneurship, as well as social, legal and ethical issues surrounding the use of the product. " "The field requires familiar professionals such as farmers, production engineers, chemists, and propagandists, but also created opportunities for new areas of business such as project managers, treatment coordinators, and research coordinators. The goal of the program is to train the graduates in the new professions in the field of medical cannabis while academizing the area. The broad learning base will enable graduates to understand all the required aspects, and their integration into the field will have unique added value to the field" .

¹ https://en.wikipedia.org/wiki/History_of_cannabis

² Dr. Efrat Bar El <https://www.קנאביס.com/2019/07-2019>



Cannabis Hemp is possibly one of the earliest plants to be cultivated. It first developed in Japan since the pre-Neolithic period. It was used for its fibers and as a food supplement and in times as psychoactive material for medicinal use. Archeologists found evidence in the Oki Islands close to Japan pointed on 8000 BC. The Hemp plants founded to be in use by the Neolithic age ("New Stone Age"). Hemp fiber imprints found on Yangshao culture, the Neolithic culture that existed extensively along the Yellow River in China. That, dating from the 5th millennium BC. The Chinese later and today known for their large farms use of hemp to make, ropes, clothes, shoes, and an early form of paper. So does in ancient Korea.

Cannabis was also known to the ancient Assyrians in Mesopotamia at some point between 3500 and 3000 BC, who discovered its psychoactive properties. "Those who walk on smoke/clouds"... burned cannabis flowers to induce Trance, which is an abnormal state of wakefulness in which a person is not self-aware off.

Cannabis found in pharmacological cults, which is a position on what is acceptable to consume as a means of intoxication for spiritual, pleasure, or medicinal use around the world.

The Hemp seeds discovered first in Siberia which suggest ancient ceremonial practices around the 5th to 2nd century BC, confirming previous historical reports by Herodotus. An ancient Greek historian who was born in Halicarnassus in the Persian Empire.³

Hashish (the cannabis resin) spreads from Persian world into the Arab world in the turn of the millennium and introduces to Egypt by "mystic Islamic travelers" these related to ideologies, ethics, rites, myths, legends, and magic may be related to them from Syria. The definition of mysticism grew to include a broad range of beliefs and ideologies related to "extraordinary experiences and states of mind".⁴

³Archambault, Paul (2002). "Herodotus (c. 480–c. 420)". In Alba della Fazia Amoia & Bettina Liebowitz Knapp (eds.). *Multicultural Writers from Antiquity to 1945: a Bio-bibliographical Sourcebook*. Greenwood Publishing Group. pp. 168–172. ISBN 978-0-313-30687-7.

⁴ King 2002, pp. 17–18.



Cannabis believed to be introduced to Africa by early Arab or Indian Hindu travelers, which Bantu settlers that communicated by speaking the Bantu languish some 4,000 to 3,000 years ago in West/Central Africa subsequently introduced to southern Africa when they migrated southward. By the 1850s, Swahili traders had carried cannabis from the east coast of Africa to the Congo Basin⁵. The Congo Basin located in Central Africa, in a region known as west equatorial Africa in the west.

It will be correct to say that the Cannabis plant has some 6000 years in its therapeutical applications that have been used by most cultures.

Now while the Cannabis plant makes a grand comeback in many countries around the world, it's worth tracing the plant's way of form, its beginning and how the Cannabis acted as a valuable player throughout the centuries.⁶

There are hundreds of thousands of cannabis strains, and each of them has a distinct genetic profile that governs its properties and potency.

It is required to first understand the genetic profile of the seed as a first step to produce to most and highest quality cannabis.

Some scientific studies between 2018-2019

In 2018, scientific studies were published and received recognition from the scientific community. From the beginning of 2019 to March, 689 scientific studies published that received scientific recognition in the field of medical cannabis and its various properties, most of which belong to the field of bio-chemical.

⁵ era Rubin (1 January 1975). *Cannabis and Culture*. Walter de Gruyter. pp. 77-. ISBN 978-3-11-081206-0. Cannabis Smoking in 13th-14th Century Ethiopia: Chemical Evidence

⁶ <https://www.visualcapitalist.com/wp-content/uploads/2018/06/history-of-medical-cannabis.html>



⁷A research study was done on Modifiable predictors of insufficient sleep durations: A longitudinal analysis of youth in the COMPASS study. Sleeping problems insomnia and nightmares research in 2018.

This study published in January 2018 and was based on 26 thousand youth between 2015-2017, and found that teenagers who consume cannabis (especially Stibe) before bedtime suffers. It was a collaboration between two Canadian research institutes operating out of three hospitals in Canada. The study found that using cannabis improves sleeping problems among teenagers with a history of sleep problems in 86 percent of the cases.

A Study published by 2018, by University of Western Ontario on the gastrointestinal infection "Crohn's" treated by Cannabis, investigated and found that the most effective way to handle this disease is using medical cannabis and cannabinoid substances. The study found that medical cannabis has anti-inflammatory effects that are suitable for the treatment of chronic Crohn's disease. The study included three trials in patients with Crohn's disease, with a total of 93 participants in all three tests, and found that within eight weeks of starting cannabis, patients showed definite signs of inflammation, many of whom reported relief from severe symptoms of vomiting, nausea, Migraines, and insomnia.

Another study on Global use of cannabis in 2018

The researchers map the extent of cannabis use for leisure and medical needs worldwide. The United Nations published it in April 2018. And conducted by a UN research team with several independent research institutes from Europe, Asia, and North America. The study requested

According to the survey, about 4 percent of the adult population in the world consumed cannabis at least once. Data for countries such as the United States, Portugal, Holland, Britain, and of course, Israel are much higher. According to the same study, the percentage of adults who experienced cannabis for recreational purposes in the Western world

⁷ Patte KA, Qian W, Leatherdale ST. Pub Med US National Library of Medicine National Institutes of Health Search database 018 Jan;106:164-170. doi: 10.1016/j.yjpm.2017.10.035. Epub 2017 Nov 9. <https://www.ncbi.nlm.nih.gov/pubmed/29109016>



ranged from 8 to 11 percent and for medical cannabis, which sometimes jumps by 2, depending on the country.

The study's conclusions confirm what we thought long ago, and Cannabis became after alcohol, the most popular recreational drug and consistently climbs the scale of its use as a medicinal plant, and has long passed more traditional medicinal herbs to use.

⁸On Arthritis treatment by Cannabis a study published by 2018

In the Faculty of Medicine at Yale University. The team looked at hundreds of previous studies on the subject and compared them to studies conducted on 120 patients at Yale University Hospital and found that 76 percent of those with chronic arthritis who used medical cannabis reported significant reductions in their lives and pain attacks.

⁹A review of medical marijuana for the treatment of posttraumatic stress disorder: Real symptom re-leaf or just high hopes?

Five studies related to Post Traumatic Disorder concluded.

One of which conducted in Israel and actively used marijuana. Three studies did not use marijuana in the treatment arm but instead evaluated the effects posture. A retrospective chart review from New Mexico relied on patients to recall their change in PTSD symptoms when using marijuana. Three studies concluded there might be a benefit, but two discouraged its use. Although the two negative studies show a statistical difference in worse PTSD outcomes, the clinical significance is unclear.

⁸ Hsiao B, Fraenkel L. Patient preferences for rheumatoid arthritis treatment. Pub Med PubMed US National Library of Medicine National Institutes of Health
<https://www.ncbi.nlm.nih.gov/pubmed/30747733>

⁹Ilona Shishko, PharmD, corresponding author¹ Rosana Oliveira, PharmD, BCPS, BCPP,² Troy A. Moore, PharmD, MS Pharm, BCPP,³ and Kenneth Almeida, PharmD⁴ PMC National Library of Medicine National Institutes of Health. Ment Health Clin. 2018 Mar; 8(2): 86–94.
Published online 2018 Mar 26. doi: 10.9740/mhc.2018.03.086
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6007739/>



¹⁰Treatment outcome studies of whole plant marijuana and related cannabinoids on PTSD are limited and not methodologically rigorous, precluding conclusions about their potential therapeutic effects

Other researches and studies were done on Mental Illness by 2019

In a study published in January 2019, researchers from three hospitals in Germany and one in Tanzania examined the potential, if any, of cannabis for the treatment of mental illness.

The conclusions of the study were conclusive and determined that medical cannabis could improve the condition in the case of mental illness such as depression and chronic anxiety. In the case of mental illnesses such as schizophrenia and mania, the researchers recommended not using medical cannabis because some sufferers of schizophrenia and mania reported a deterioration in the condition after using medical cannabis.

¹¹ previous research published on October 2018 pointed out that due to the significant adverse effects of cannabis use on individuals with serious mental illness, which include worsening psychiatric symptoms and a greater likelihood of addiction to the drug, clinicians should use caution in prescribing medical marijuana among this vulnerable population.

¹²A study made in Israel, regarding personal experience and attitudes of pain medicine using Cannabis.

An Israeli team Found that on chronic pain relief through medical cannabis, reported the merits of medical cannabis in the treatment of chronic pain patients. The team of researchers and physicians from the University of Haifa, the Technion, Tel Aviv University, Ben-Gurion

¹⁰ Steenkamp MM, Blessing EM, Galatzer-Levy IR, Hollahan LC, Anderson WT. Marijuana and other cannabinoids as a treatment for posttraumatic stress disorder: A literature review. *Depress Anxiety*. 2017 Mar;34(3):207-216. doi: 10.1002/da.22596. Epub 2017 Feb 28. <https://www.ncbi.nlm.nih.gov/pubmed/28245077>

¹¹ Elizabeth Sinclair Director of Research Treatment advocacy Center 2018

¹² Sharon H, Goldway N, Goor-Aryeh I, Eisenberg E, Brill S PubMed US National Library of Medicine National Institutes of Health, <https://www.ncbi.nlm.nih.gov/pubmed/30104896>



University and a hospital in London, in collaboration with 79 doctors and hundreds of patients in Israel and England, found that medical cannabis is very helpful for those suffering from chronic pain, especially those related to injuries and injuries to the nervous system.

The doctors who participated in the study noted that their views on the efficacy of medical cannabis had changed from one end to the next. They were convinced by the study that medical cannabis treatment for patients with chronic pain was not dangerous.

Research on cannabis treatment for Liver disorder published by 2018

Researchers from various US universities and hospitals from Texas, Kentucky, and Kansas were asked to check the properties, if any, of medical cannabis given to ingestion of liver health. The study showed that the cannabinoid materials THC and CBD have medicinal properties for the treatment of various infections and diseases in the liver through the activation of the endocannabinoid system by the same cannabinoid substances in a way that improves the body's ability to cope with various infections and viruses that can attack the liver. The study concludes that oral medical cannabis has many medicinal properties that can strengthen and heal our liver.

¹³ Other researches were concluding that "All in all, the recent trends in research, clinical experiences, as well as the legislature, has opened up new avenues towards the widespread clinical application of cannabis and its derivatives as well as modifiers of the components of the endocannabinoid system. More research is required to exploit this new evidence fully".

¹⁴In the Epilepsy and Cannabis treatment study by 2018

¹³ Goyal H, Rahman MR, Perisetti A, Shah N4 Chhabra R. Eur J Gastroenterol Hepatol. Cannabis in liver disorders: a friend or a foe ?2018 Nov;30(11):1283-1290. doi: 10.1097/MEG.0000000000001256. <https://www.ncbi.nlm.nih.gov/pubmed/30169449>

¹⁴ Stockings E, Zagic D, Campbell G, Weier M, Hall WD, Nielsen S, Herkes GK, Farrell M, Degenhardt L. J Neurol Neurosurg Psychiatry. 2018 Jul;89(7):741-753. doi: 10.1136/jnnp-2017-317168. Epub 2018 Mar 6. <https://www.ncbi.nlm.nih.gov/pubmed/29511052> US National Library of Medicine National Institutes of Health



Epilepsy was carried out by five research institutes in Australia and London. Evidence was presented by the five teams regarding the medicinal properties of cannabis for epilepsy. The researchers found that medical cannabis is very effective in relieving all symptoms of epilepsy, convulsions to mood changes, and more. The results were that ILP patients who used medical cannabis reported a 50 percent reduction in seizures for the first week of treatment, a trend that lasted for the month, with a reduction in the number of attacks in the study at 80 percent.

In a study done by 2019 on Performance anxiety during sex

In the United States on American youth, a team of researchers and sexologists from four research institutes in New York City examined the effect, if any, of cannabis use on anxiety during sexual intercourse among young New Yorkers. In 67% of cases, those who smoked that cannabis improves their performance in the bedroom or relieves the anxiety of their performance.

The conclusion of the research team is that today, 3 out of 4 young cannabis users use it to relieve performance anxiety before sex.

As shown by the studies that appear here, there is evidence of cooperation between researchers and medical institutes. This gives a kind of validity and makes it easier for patients to accept cannabis as a medicine for a wide range of diseases, from depression, Crohn's disease, to strengthening the body's systems after chemotherapy and radiation therapy.

¹⁵In September 2018 in a previous study published in the Forb magazine it was concluded by the researchers, and published in the Journal of Sexual Medicine (JSM), entitled the Association Between Marijuana Use and Sexual Frequency in the United States: A Population-Based Study, the goal of the study was, "To elucidate whether a relation between marijuana use and sexual frequency exists using a nationally

¹⁵ Dr. Michael L. Eisenberg and Dr. Andrew J. Su, Stanford University. 41,918 views Sep 10, 2018, "New Studies Show That Marijuana Enhances And Increases Sex".
<https://www.forbes.com/sites/sarabrittanysomerset/2018/09/10/new-studies-show-that-marijuana-enhances-and-increases-sex/#3121fe6129d2>



representative sample of reproductive-age men and women.” They found that The clinical implications of their study revealed that “Marijuana use is independently associated with increased sexual frequency and does not appear to impair sexual function.” In fact, daily users across all demographic groups reported having 20% more sex than those who have never used cannabis

The cannabis seeding to harvesting

While following the cannabis chain of growing from seed to harvest there are always 5 parts of this chain.¹⁶

1. **Germination**, the seeds should be examined on a regular basis to determine and decide each balance of best Humidity, White light, and Natural fertilizer.
2. **Seeding**, This part of the cannabis grows chain, the plants need maximum light and the exact water level and PH.
3. **Vegetative**, This part includes a daily checklist for nutrient's mix to balance the growing condition.
4. **Flowering**, are now in the stage of producing the iconic Trichomes that are used as the delivery vehicle for the THC, one of the main factors in potency
5. **Harvesting**, Timing of the harvesting is very particular in determining the taste and the smell along with the cannabis matured properties

Those are the stages of cannabis grow and harvesting. Then after harvesting it all depends on the curing, drying and hand trimming which are the main and final torches for excellent and premium cannabis products.

¹⁶ <https://www.visualcapitalist.com/sponsored-differentiates-premium-cannabis-product/>



The cannabis parts contain & use

¹⁷The plant Cannabis is part of the Cannabaceae family. It is also classified as Cannabis sativa L. Each part of the Cannabis plant provides a purpose but the whole of a cannabis plant is much greater than the sum of its parts.

The cannabis plant is composed of several parts, which are very similar to any other standard plant that you will encounter outside. The main thing that distinguishes and distinguishes the cannabis plant from other plants is its amazing flowers, but we should also recognize the rest of its parts, which play a significant role in making these flowers.

When we look at the cannabis plant closely, we can see the whole world from the roots and branches, to gorgeous flowers, covered with colorful hairs and tiny sparkling crystals.

Each part is very important in itself, and all together make up the wonderful plant we all love. So here is some information about each part of the cannabis plant, and its role, and the functions they perform.

¹⁷WeedMaps, <https://weedmaps.com/learn/the-plant/parts-of-cannabis-plant/>

Parts of the Cannabis Plant¹⁸

PARTS OF THE CANNABIS PLANT



The Roots

Healthy roots are the basis of a healthy plant, and have a direct connection to chubby flowers full of sticky scales, as we like.

The root is the basis for a healthy and strong plant. Plants, unlike animals, actually exist in two parallel worlds. There is the world of air, where the plant absorbs light and carbon dioxide (CO₂) in its construction process, and there is the underground world, the world of roots, which is a dark and mysterious environment hidden from view.

The main function of the roots of the plant is to anchor it to the ground, to carry out the process of cellular respiration, and to absorb water filled with nutrients and nutrients that are then transferred to the rest of the plant.

The Flowers

The flowers of the female cannabis plant can be identified by their small teardrop structures, which consist of pistils attached to bracts. Flowers

¹⁸ <https://www.canna.co.il/%D7%97%D7%9C%D7%A7%D7%99-%D7%A6%D7%9E%D7%97-%D7%94%D7%A7%D7%A0%D7%90%D7%91%D7%99%D7%A1/> <https://weedmaps.com/learn/the-plant/parts-of-cannabis-plant/>



are usually covered with a frosty coating of trichomes, with a heavier density of trichomes making for a more desirable flower. Female flowers, which are the reason why we love the cannabis plant, are composed of smaller flowers. A female flower of cannabis is actually the accumulation of smaller organelles called cups (individual Calyx).

Female flowers contain the highest concentration of active ingredients from all parts of the plant, including of course the audience favorite, the THC. The tallest flower, which will also be the largest and most impressive, is called cola - a common agricultural concept rather than a slang associated with the world of cannabis.

The Cola

Cola is the main “flower,” at the end of a female plant’s stem is composed of many small floral clusters. The bigger, heavier, and more densely covered in trichomes, usually the better, though some cultivars will naturally grow more airily.

The Bract

A modified leaf or scale, typically small, with a flower or flower cluster in its axil. Bracts are sometimes larger and more brightly colored than the true flower, as in a poinsettia.

The small leaves that surround the female plant’s reproductive cells. When a female plant is exposed to male pollen, the bracts surround and shield the seed pod.

The Trichomes

Hair-like appendages found on the surface of the cannabis plant that either protects it from external stressors or contains resinous glands that create the plant's cannabinoids, flavonoids, and terpenes. Trigonometry of glands ("crystals" rather than stamens), a resin in the form of a small mushroom. The trichomes will look like small sparkling crystals, shiny crystals of active substances Tricky, cuddling, wrestlers and flavonoids, which are the oils. Trichomes give cannabis buds a crystal-like sheen and make them sticky feeling.



The Race

The "backbone" of the plant and the main path through which all the nutrients, water, and energy that the plant needs are transferred. A thick breed will transport more nutrients and produce a larger crop

The trunk has no active ingredients and is mainly used in the fiber industry for the production of fabrics, ropes, and concrete. In this area, the "industrial" type of cannabis is usually used

The Fan Leaves

Large, protruding leaves that appear along the length of the plant that is essential to the living plant's photosynthesis, but is always removed from the finished, harvested product.

Sugar Leaves

Small leaves found throughout cannabis colas cupping buds that are typically trimmed off the flower after harvest. They are called 'sugar' leaves because of the high volume of trichomes found on them resembling sugar. Sugar leaf trim can be used to make edibles or concentrates.

The Pistil

The female flower's reproductive system that is made up of a single ovule with two protruding stigmas.

The Stigmas

The thin hairs that extend from a female's bract to catch male pollen. They are commonly and incorrectly confused with pistils.

The Stem

The main support structure of the plant that transports fluids, nutrients, and information from the roots to the rest of the plant. The stem provides a foundation to give fan leaves access to the light they need to facilitate growth and carries the weight of heavy colas.

The Node

The part of a plant stem from which one or more leaves emerge, often forming a slight swelling or knob. Nodes can hold one or more leaves or offshoots.

Different parts of the plant are used for different uses:

The Seeds are often used in food and cosmetics.

The Stalks are the source of fiber used in building materials and clothing.

The Flowers, on the other hand, is harvested for its cannabinoid content.

The cannabinoid content of hemp is where it differs the most from marijuana.

Hemp has high concentrations of cannabidiol (CBD), the non-psychoactive cannabinoid, but it carries almost no THC (below 0.3%). It's the THC content that gives marijuana its psychoactive effects. Unlike marijuana, hemp has been excluded from the Controlled Substances Act with the introduction of the 2018 Farm Bill (USA). According to the new act, hemp can be commercially grown and manufactured into CBD products for sale to the public.



¹⁹ Cannabis Info

¹⁹ <https://www.cannabis.info/en/blog/18549-how-to-produce-your-own-cannabis-seeds>

The seeds contain and usage

1. The seeds

Seeds are the result of pollinating female flowers, and they are of course the way of the plant to ensure for itself reproduction for future generations. In a female cannabis plant, male branches may develop and self-fertilization occurs

The main goal of cannabis growers is to produce female flowers without seeds because seed production requires a lot of energy from the plant, which can instead be used to create plump and sticky flowers.

According to many sources online and relating to an article Published by Cathleen Crichton²⁰, Hemp/ Cannabis seeds of the Sativa plant has full nutrition's components and provides supper supplements to the body such as Protein, Unsaturated fats, Fiber, and Minerals and Vitamins. The plant itself is a rich source of both cellulosic and woody fibers²¹

2. The Protein

Studies show that 30 grams of seeds contain 9.46 grams of Protein which provides all nine essential amino acids that can't be produced in the body as they only exist in food. The Amino Acids are : (histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, [tryptophan](#), and valine.)²². Amino acids are the building blocks of the body they break down the foods, control the body grow, repair body tissues and other body functions. The Hemp/cannabis seeds are specifically reached in one of those acids namely The Arginine that has its benefits to Heart disease,

²⁰ <https://www.medicalnewstoday.com/articles/323037.php>

²¹ "*Cannabis sativa*: The Plant of the Thousand and One Molecule"Christelle M. Andre,* Jean-Francois Hausman, and Gea Guerriero 2016 Feb 4. doi: 10.3389/fpls.2016.00019

²² <https://medlineplus.gov/ency/article/002222.htm>



Delayed growth in children, and other medical issues such as Diabetes, Fertility, and Erectile Dysfunction.

3. The Unsaturated Fats

The Hemp/Cannabis seeds are a very good source of Essential Fatty Acids such as Alpha Linolenic Acid (ALA), known to us as Omega3, again, the body cannot produce by itself but only through diet/food consumption. Omega 3 is essential and crucial for long-term health. The seeds are low in Saturated fats and contain no Trans oil.

4. The Fiber

According to some scientific information, three spoons of Cannabis seeds are a source for 1.2 gram of Fiber, even though most of the fiber in the hemp plant is in the outer hull.

Using daily consumption of Fiber could help in Weight Management and appetite reduction as well as balancing the blood sugar levels and help with Gut health.

5. Minerals and Vitamins

Cannabis seeds are rich in Fe, beneficial nutrients where the majority including Vitamins A, B, D, and E. The seeds as mentioned above are a valuable source of powerful antioxidants and liver enzymes. The seeds as superior as they are they contain a wide array of healthy minerals, such as Magnesium- which is a natural stress buster and helps to fight anxiety and depression. Zinc that provides the body with protection against free radicals and inflammation and Iron that helps produce the oxygen in the body.

The versatility of hemp seeds may lead to the sustainable development of numerous products to be employed in the food, cosmetic, therapeutic and nutraceutical industries ²³. Nowadays, cold pressed hemp seed oils, flour, and seeds are commercially available.

²³ Ranalli, P.; Venturi, G. Hemp as a raw material for industrial applications. *Euphytica* 2004, *140*, 1–6. [\[Google Scholar\]](#) [\[CrossRef\]](#)



In a study published by December 2018 ²⁴, "Interestingly, seeds flour was very high in K, suggesting that flour can contribute to regulating heartbeats, maintain fluid balance, and promote muscle contraction. Flour was high in Mg as well, which supports nerve and muscle functions and helps to maintain the ionic balance integrity of cells".

It is also found in other sources that vitamin E, Magnesium an important vehicle for the proper functioning of hundreds of enzymes in the body. Phosphorous, Potassium which once has low accuracy might cause weakness and lethargy, rapid pulse, nausea, diarrhea, and tingling sensations. The seeds are also a good source of iron, zinc, and B vitamins, including, niacin, riboflavin, thiamine, vitamin B-6 and Folate which found in a wide range of foods including vegetables, legumes, cereals, eggs, and fruit. It is also known as vitamin B-9²⁵

The seeds for personal consumption either by the seeds or by the flour made of the seeds are most **beneficial for the body and the brain.**

The seeds Usages and Benefits

1. Protecting the brain

we can say that some studies have been made during the last few years A study published in the journal Food Chemistry found that hemp seed extract has antioxidant effects in lab tests. These effects may result from the seeds' cannabidiol (CBD) content

Results of a review from 2018 suggest that CBD and other compounds in the seeds may have neuroprotective, anti-inflammatory, effects and may also help to regulate the immune system.

²⁴ Francesco Siano,Stefania Moccia,Gianluca Picariello,Gian Luigi Russo,Giuseppe Sorrentino,Michele Di Stasio,Francesco La Cara, Maria Grazia Volpe Comparative Study of Chemical, Biochemical Characteristic and ATR-FTIR Analysis of Seeds, Oil and Flour of the Edible Fedora Cultivar Hemp (*Cannabis sativa* L.) <https://www.mdpi.com/1420-3049/24/1/83/htm>

²⁵By Megan Ware RDN LD June 2018 Why is folate good for you? <https://www.medicalnewstoday.com/articles/287677.php>



The review suggests that, because of these potential properties, CBD may help with neurological conditions, including Parkinson's disease

Alzheimer's disease, multiple sclerosis, neuropathic pain, childhood seizure disorders

2. Reduce inflammation

The Omega 3 and 6 ratio within the cannabis seeds has anti-inflammation influences on the body. It also contains gamma-linolenic acid (GLA), a fatty acid which may also have anti-inflammatory effects.

A review in ²⁶ The European Journal of Pharmacology states that humans process GLA in a very complicated way. When looking at these studies, it is important to note that researchers usually use high concentrations of hemp seed extracts and that eating the seeds may produce less dramatic effects. It can also manage the symptoms of Chronic diseases, metabolic issues, Type 2 Diabetes, and Arthritis.

3. Relieve rheumatoid arthritis

Rheumatoid arthritis is a long-term, progressive, and disabling autoimmune disease. It causes inflammation, swelling, and pain in and around the joints and other body organs Its an autoimmune condition. It causes the immune system to attack its own tissues, which leads to inflammation in the joints.

In 2014 study ²⁷ " Hempseed oil induces reactive oxygen species- and C/EBP homologous protein mediated apoptosis in MH7A human rheumatoid arthritis fibroblast-like synovial cells suggested that hemp seed oil could have anti-rheumatic effects.

On the other hand, on a study published on 2018 ²⁸ "Cannabinoids for the treatment of rheumatic diseases — where do we stand?" it has described

²⁶Susan Sergeant, an Elaheh Rahbar,b and Floyd H. Chiltonc Gamma-linolenic acid, Dihommo-gamma linolenic, Eicosanoids, and Inflammatory Processes, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4975646/> Aug 16 2016

²⁷ MiniJeongaJaewookChoaJong-IIShinaYong-JoonJeonaJin-HyunKimaSung-JoonLeecEun-SooKimabKyunghoLee, **Hempseed oil induces reactive oxygen species- and C/EBP homologous protein-mediated apoptosis in MH7A human rheumatoid arthritis fibroblast-like synovial cells** Journal of EthnopharmacologyVolume 154, Issue 3, 3 July 2014, Pages 745-752. <https://www.sciencedirect.com/science/article/pii/S0378874114003511?via%3Dihub>



that there is a lack of conclusive evidence to suggest that cannabinoids could effectively treat rheumatic diseases. The authors noted that more research is needed. Rheumatic symptoms are a pain, swelling, and stiffness

in more than one joint, a general feeling of being unwell, sometimes fever, weakness, and weight loss²⁹.

4. Improve skin conditions

The anti-inflammatory compounds in hemp seeds may help Atopic dermatitis (AD) and Acne which is a chronic, inflammatory skin condition that causes spots and pimples, especially on the face, shoulders, back, neck, chest, and upper arms. One of the Acne symptoms is a deficiency in omega-3s. The high omega-3 content in hemp seeds may help to manage and reduce Acne symptoms.

A 2018 publication based on a study at the George Washington University published online,³⁰ explored the effects of dietary changes on skin diseases. While the authors found evidence that eating more omega-3s may improve symptoms of acne, determining the extent of the effects will require more research.

The authors also note that prebiotics and plant fibers may help to manage symptoms of AD. Hemp seeds are a rich source of plant fiber.

5. Promote heart health

The Omega-3 fatty acids healthful ratio to Omega-6 fatty acids that improve the health of the heart and reduces risks of arrhythmias and heart disease. It also has high levels of arginine, an amino acid that turns into nitric oxide that essential for artery and vein dilation and keeps blood vessel walls smooth and elastic.

²⁸ Daphna Katz-Talmor, Itay Katz, Bat-Sheva Porat-Katz & Yehuda Shoenfeld
Review Article | Published: 08 June 2018 "Cannabinoids for the treatment of rheumatic diseases — where do we stand? June 2018.<https://www.nature.com/articles/s41584-018-0025-5>

²⁹ <https://www.medicalnewstoday.com/articles/323361.php>

³⁰Rajani Katta, MD1 and Mary Jo Kramer, Baylor College of Medicine, Houston, TX, USA
Georgetown University School of Medicine, Washington, DC, USA Skin and Diet: An Update on the Role of Dietary Change as a Treatment Strategy for Skin Disease, STL Volume 23 Number 1 - January 1, 2018, <http://www.skintherapyletter.com/dermatology/diet-change-treatment-skin-disease/>



³¹According to the United States Department of Agriculture (USDA), 3 tablespoons of hemp seeds contain 116 calories and the following Nutrients.

Protein	9.47g
Carbohydrates	2.60g
Fat	1.20g
Total fatty acids	14.62g
Monounsaturated fatty acids	1.62g
Polyunsaturated fat	11.43g
Saturated fatty acids	1.38g

Hemp seeds are also a healthful source of vitamin E and minerals, such as calcium, iron, magnesium, potassium, and zinc

Refined **hemp seed oil** is clear and colorless, with little flavor. It is primarily used in body care products. **Industrial hemp seed oil** is used in lubricants, paints, inks, fuel, and plastics. Hemp seed oil is used in the production of soaps, shampoos, and detergents.

Cannabis oil, on the other hand, is a concentrated **extract obtained by extraction of the dried flowers** or leaves of the cannabis plant. It is not actually an oil but derives its name from its sticky and oily appearance. The purpose of producing cannabis oil is to make cannabinoids and other beneficial components, such as terpenes, available in a highly concentrated form.

The Flowers and its properties

Cannabis can be male, female, or both (bisexual). Female plants produce the large flowers that secrete resin, while male plants produce smaller flowers with small pods attached to the base of the leaves. The male plants pollinate the females to fertilize them and start the seed production process.

³¹ The nutritional profile of hemp seeds <https://www.medicalnewstoday.com/articles/323037.php>



But the strong flowers that we love come from the seedless female plants that have not yet been fertilized, and are called Sinsemilla (sinsemilia: "seedless"). When the female is not fertilized, it grows large and rich flowers in cannabinoids, which contain no seeds.

The rare bisexual plants also contain male and female sex organs, allowing the plant to pollinate itself during flowering. This self-pollination is considered harmful among breeders because it destroys the seedless Sinsemilla plants and then passes bisexual genes.

Cola, or inflorescence, is the area where dense female flowers bloom. The central cola is formed at the top of the plant, while smaller sounds are formed along with the flowering sites in the lower regions. You can increase the number and size of your voices using tumor techniques.

Female flowers, which are the reason why we love the cannabis plant, are composed of smaller flowers. A female flower of cannabis is actually the accumulation of smaller organelles called cups (individual Calyx).

Female flowers contain the highest concentration of active ingredients from all parts of the plant, including of course the people favorite, the THC. The tallest flower, which will also be the largest and most impressive, is called cola - a common agricultural concept rather than a slang associated with the world of cannabis.

Conclusions

There are so many Cannabis varieties among them each has a different structure of THC and CBD. For Example, the flowers of the "Harlequin cannabis" is a hybrid species with dominant Sativa properties 75/25 in favor of the Sativa and is known for the stable properties of CBD in this species.

The genetics of Harlequin comes from a hybrid of Colombian Gold, Nepali Indica, wild Thai and wild Swiss variety.

The effect of Harlequin is unique in that it provides a clear head, unlike other CBD-rich subtypes. In most tests done for this species, Harlequin has an almost constant ratio of 5: 2 CBD: THC, a characteristic that



distinguishes the species and makes it an optimal species for the treatment of pain and anxiety.

The high concentration of CBD balances the psychoactive effects of THC, creating a very balanced and convenient species for medical use.

Appearance and taste

The flowers of this species have a sweet and earthy flavor, the flowers are of average size and many white hairs. THC

10%- 4% . CBD15% - 6% and they flowering between 7 to nine-month

Another sample is the "Trainwreck Cannabis" is a hybrid species with Sativa's effects that affect rapidly. His genetics comes from the Mexican and tai crosses that are the side responsible for the attributes of the Sativa along with the organ that is responsible for the indica side.

The effects of this strain are rapid and users report increased creativity, joy and even report that this strain is particularly helpful for migraines and pain.

Older ADHA users reported positive effects wh.ille using it

Appearance and taste

This species is characterized by lime-earth flavors with a pine aroma. Green flowers, oily and dense with orange hair.

THC 21%- 12%, CBD 0.15%, and flowering time is 8-9 weeks.

³²There are so many Cannabis varieties and so little of scientific studies that it would take more time and funds to cultivate the knowledge and to drive it to new Technologies.

In Israel Only, there are some 65 Varieties of Cannabis for the different pathologies for the sole, the mind and the physics.

The Israeli cannabis researcher at the Technion, Prof. Dedi Meiri, is conducting a comprehensive study examining which cannabis strains kill cancer cells and why.

³² <https://cannapedia.co.il/strains>



³³"Two years ago, during the establishment of his new laboratory at the Technion's Faculty of Biology, Meiri met a friend who established a medical treatment company using cannabis. The friend, whom he knew from the master's period, told him about preliminary evidence of the efficacy of cannabis not only in mitigating the side effects of chemotherapy (nausea and pain) but also in actually blocking the cancer process. "At first it made me laugh a bit," says Prof. Meiri, "because it did not sound serious to me, but after reading articles on the subject, I accepted his proposal: to conduct a preliminary study for proof of concept."

Israel, is considered the world's research center in the field - largely thanks to Prof. Rafi Meshulam of the Hebrew University, He is an Israeli organic chemist and professor of Medicinal Chemistry at the Hebrew University of Jerusalem in Israel. who began studying cannabis as early as 1963 and discovered THC, the psychoactive substance in cannabis. One of the most important discoveries of Prof. Meshulam is the existence of the endocannabinoid system in the human body.

Little Israel is now conducting more clinical trials of cannabis than any other country on the planet. The results of these studies benefit the lives of countless patients in the world - from oncology patients, through children with autism, epilepsy, post-traumatic stress disorder, to elderly people with Parkinson's disease.

The list of medical indications that medical cannabis helps relieve symptoms is long and growing at a dizzying pace, all thanks to the revolutionary discovery of the summer of '63.

According to Prof. Meshulam ³⁴There was a fairly extensive study in the United States and England about cannabis in the 1930s, but it was stopped because of World War II and later because of the laws that classified the plant as a drug. "

Dr. Meshulam, on the forefront of Cannabis' medical use, has signed hundreds of articles in the field, and the hand is still on the rise. His groundbreaking articles were quoted in their thousands. Even today, at

³³ Prof. Dedi Meiry <https://www.technion.ac.il>

³⁴ <https://www.ynet.co.il/articles/0,7340,L-5269632,00.html> May 2018 online magazine, Ynet.



the age of 87, Prof. Meshulam leads a number of studies in Israel and abroad, and the chemist advises a wide range of companies involved in the field. Prof. Meshulam is considered by many to be the light and innocence of the study of cannabis. If you type the word "professor of marijuana" into Google's search engine, the first result will be Rafael Meshulam.

For the benefits of the different varieties to the different desires, he said "There is no doubt that THC and CBD also affect cancer cells. In an experiment conducted at Tel Hashomer on children with cancer, both THC and CBD were seen to have an effect. Not all cancers are equally affected. Every cancer has a different mechanism. Some cancer cells learn to 'throw out' anticancer drugs, so anti-cancer drugs that stop working after a while."

"In certain cancers, CBD reduces this phenomenon, but it has not been tested on people," he said, adding: "Oncology patients ask me whether cannabis should be used or not, and I cannot give them an answer because there are cases where cannabis may have helped. It did not help. Nobody talks, so we do not know. "

Prof. Meshulam was asked about the future and answers; What is the future for the study of medical cannabis?

"I predict that this field will only expand and that drug research is still at a very underdeveloped stage, that there are close to 100 substances that are close to "Anandamide Cannabis", and we have recently shown in mice that the body produces substances that fight addiction, other substances that damage brain and fight osteoporosis. I hope science will continue to investigate. "