# A Study On Antioxidant And Anticancerous Activity And Evidence Of Cannabis In Ayurveda- The Ancient Medicinal System Of India.

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**Abstract:**
A wonderful natural resource with many uses, cannabis sativa spp. includes food, medicine, personal care products, textiles, building materials, and nutritional supplements. It has been grown for millennia to utilise the plant's collection of advantageous natural compounds. Significant trends for both medical C. sativa and fiber-type hemp are revealed by qualitative and quantitative analyses of these components. Important aspects of C. sativa's biology, biochemistry, and taxonomy are explored. It is discussed in particular how the plant produces terpenes and cannabinoids through convergent biochemical pathways In this we have focus on the Antioxidant Potential, Anticancer Potential and Ayurvedic Potential

**Keywords:** Cannabis, Antioxidant Potential, Anticancer Potential and Ayurvedic Potential

**Introduction:**

For thousands of years, people have employed plants to heal a variety of ailments. Medicines made from terrestrial plants have been utilised in Egypt, China, India, and Greece. From the botanicals, an astounding number of contemporary medications have now been created. Secondary metabolites from plants have shown to be a great source of novel pharmaceuticals. Together, coronary disease and cancer account for more than 80% of fatalities in industrialised nations. The causes of death for eight out of 10 people are cancer and coronary heart disease. Cancer-related malignant tumours are the second most prevalent disease. On a global level, cancer cases continue to rise. The fact that mainstream medicine does not understand the causes of cancer or how this disease spreads has only one logical explanation (Harvey, 1999). Both industrialised and developing nations struggle with a significant public health burden from cancer. In 2012, it was predicted that there were 10.9 million new cases, 6.7 million fatalities, and 24.6 million cancer survivors worldwide. A group of illnesses known as cancer are characterised by uncontrolled cell division and spread. Environmental variables have a major role in the development of the complicated hereditary disease known as cancer. Cancer-causing substances, or carcinogens, can be found in people's food, water, air, chemicals, and exposure to sunlight.( Farnsworth et al,.1985) ) It is hardly unexpected that over 90% of malignancies arise in epithelia since epithelial cells cover the skin, line the respiratory and digestive passages, and metabolise ingested toxins. More importantly, the adoption of many aspects of the contemporary Western diet (rich in fat and low in fibre) and the globalisation of unhealthy behaviours, particularly smoking, will raise the prevalence of cancer. About 30% of new cancer cases are caused by food and tobacco use, with infection also playing a role (Vetrivel et al,.2009). Terpenes have several medical applications, but antiplasmodial activity stands out because of how similar their mechanism of action is to that of the widely used antimalarial medication chloroquine. Particularly monoterpenes are the focus of extensive research on their antiviral capacity. Terpenes have the potential to be used as anticancer and antidiabetic drugs given the rise in diabetes and cancer cases in the modern world. Terpenes also provide for flexibility in the route of administration and the reduction of side effects in addition to these qualities. Many terpenes were employed in traditional herbal medicine. Curcumin is one such terpene, and it has a number of beneficial qualities, including those that are anti-inflammatory, antioxidant, anticancer, antiseptic, antiplasmodial, astringent, digestive, and diuretic. Additionally, curcumin has recently become popular in healthy meals and has enabled numerous medical studies (Cox-Georgian et al,.2019). Cannabis sativa is an intriguing plant that contains a variety of healthy natural compounds. It has been cultivated all over the world and throughout history for use as a food, fuel source, nutritional supplement, body care product, source of paper, building material, medicine, and in textiles.Cannabis seeds, particularly their oil, are very nutrient-dense and frequently eaten whole or utilised in food dishes. Whole hemp seed contains approximately 20–25% protein, 20–30% carbohydrates, and 10–15% insoluble fiber In addition, it contains a mixture of the saturated fatty acids palmitic and stearic acid as well as oleic acidEssential fatty acids (EFAs) cannot be

produced naturally by the human body and must be sourced from the diet—LA and LNA are omega-6 and omega-3 essential fatty acids, respectively, that are well known for their general health benefits. Hempseed oil also tends to contain high amounts of gamma-linolenic acid (GLA) and stearidonic acid (SDA), which are metabolites of LA and LNA(Hartsel et al,.2016) Cannabis sativa L., sometimes known as hemp, is one of the oldest plants ever domesticated and has been used in a wide variety of fields, including the food, drug, and cosmetic industries as well as the textile, building, and paper industries. While the seeds are a rich source of fatty acids and proteins for the feed and food sectors, and the stems offer exceptionally high-quality cellulosic and woody fibres, the leaves and inflorescences are a veritable treasure trove of phytochemicals. Numerous pharmaceutical applications can benefit from the wide range of bioactive chemicals. ( Kornpointner, et al,.2021)

**Anticancer potential of cannabis:**

Both industrialised and developing nations struggle with a significant public health burden from cancer. It is the second most widely distributed common disease in the globe. So that early research focuses on the active component of the plants, traditional medicines or herbal formulations can serve as the source of prospective new pharmaceuticals. New plant-derived natural compounds and their analogues are being developed daily for their anticancer properties. Clinical and preclinical research uses a number of medicinal plants' potential compounds. Worldwide, there are several plant-based anticancer medications in clinical use, including taxol, vinblastine, vincristine, camptothecin derivatives, topotecan and irinotecan, etoposide, etc. (Kainsa, et al,.2012) Malignant tumours typically develop quickly, invade nearby tissue, and—most importantly—colonize distant organs. There is no doubt that aliga exists since cancer cells have the capacity to separate from the primary tumour and form a secondary tumour that is distinct from the primary. The suffi oa typically denotes a tumour, and glandular epithelial tumours are known as adeoas, such as oloi adeoa. Surf epithelia clusters are referred to as papilloas, such as the ski papilloa. However, the terms carcinoma and sarcoma, which are distinguished by the tissue of origin (for example, prostatic carcinoma), refer to malignant tumours of the epithelia and connective tissue, respectively. As in leukaemia, the malignant cells may be present in liquids. However, the majority happen in solid tumours that start out as different tissues in different places of the body. (Vetrivel et al,.2009). Cannabis sativa spp. is a remarkable multi-functional natural resource used for a variety of purposes, including food, medicine, body care items, textiles, building materials, and nutritional supplements. It has been raised for millennia to take use of the plant's arsenal of beneficial natural chemicals. Both a qualitative and quantitative analysis of these elements reveals significant patterns for both medical C. sativa and fiber-type hemp. Important facets of the biology, biochemistry, and taxonomy of C. sativa are discussed. In particular, the convergent biosynthetic routes that the plant uses to make terpenes and cannabinoids are described. The in vitro and in vivo results, as well as the chemical descriptions of the physiologically active components (Hartsel, et al,.2016)

**Antioxidant potential of cannabis:**

Plant antioxidants, which include substances like ascorbic acid, tocopherols, polyphenolic compounds, and terpenes, are crucial for maintaining human health. The essential oils of numerous plant species, including those that are rich in terpenes, which are plentiful in cannabis, have been investigated for their antioxidant capabilities. Numerous mono- and sesquiterpenes have antioxidant activities. Terpenes in cannabis, such as -caryophyllenelimonene and -myrcene, have been shown to have antioxidant capabilities. Several cannabinoids, including THC, CBD, and CBG, have also proven to have antioxidant characteristics. (Hartsel et al,.2016) Cannabis sativa L. has been used for many different things for a very long time. The roots have historically gotten less attention than the shoots, which are frequently used and highly studied. Triterpenes and phytosterols are plentiful in the roots, which have a very different phytochemical spectrum from the remainder of the plant because no detectable cannabinoids are present. Three chemovars were examined by means of in vitro and in vivo techniques for the secondary metabolite composition and antioxidant capabilities in order to shed light on the distinct phytochemistry of hemp roots and the associated industrial potential.( Kornpointner, et al,.2021)

**Ayurveda Potential of Cannabis:**

India is a land steeped in faith and mysticism. Ayurveda,combining the Sanskrit words for life and knowledge,is a system of medicine intertwined inextricably with these traits. That a core of belief combined with empirical experimentation could produce a viable medical regimen still widely practiced after well over 3000 years is astounding to Western physicians. Cannabis was similarly bound to faith and mysticism in India in the past,in the Hindu and Islamic traditions,as well as in numerous other minority religions Ayurveda is based on a conceptual medical system that seeks to balance three functional elements,called doshas,that the human body is composed of, and are commonly represented as Vataor Vayu (ether or air),Pitta (fire and water) and Kapha (phlegm or water and earth …the word Vayu,does not imply ‘Wind’in Ayurvedic literature,but comprehends all the phenomena which come under the functions of the Central and Sympathetic Nervous Systems; that the word Pitta does not essentially mean ‘Bile’but signifies the functions of Thermogenesis or heat production and metabolism,comprehending in its scope the process of digestion,coloration of blood and formation of various secretions and excretions and that the word Kaphadoes not mean ‘Phlegm’but is used primarily to imply the functions of Thermo-taxis or heat regulation and secondarily formation of the various preservative fluids,e.g.,Mucus,Synovia,etcCannabis sativa seems to have diffused from a geographic point in Central Asia,according to classical plant explorerAccording to historical plant explorers and more recent authority, cannabis sativa appears to have spread from a geographic location in Central Asia. The following modern Ayurvedic qualities of cannabis are:

papahari, which encourages phlegm separation, loosening, and expulsion; grahini, which encourages retention and bowel binding; pachani, which encourages digestion; ushna, which encourages heat; pitala, stimulating bile flow; Mada-vardhani, encouraging chattiness or removing the volitional speech constraint; Moda-vardhani, which fosters joy; Vag-vardhani, which fosters the digestive fire; Dipani, which fosters appetite; Ruchya, which fosters taste; nidraprada,hypnotic (Russo, 2005).

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