

Research Article

CANNABIS SATIVA: Industrial hemp (fiber type) - An Ayurvedic Traditional Herbal Medicine

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ABSTRACT

This review paper highlights the medicinal importance of the hemp and hemp based products, hemp seeds, hemp oil, and hemp used in food products. Based on the literature review performed, there is a significant scientific evidence that provides support for the usage of Cannabis sativa as a traditional phytomedicine by folk medicine practitioners of India. According to [Ayurveda](#) in India, the medicinal value of the Cannabis plants was well documented more than 3,000 years ago. The earliest written reference to Cannabis in India may occur in the [Atharvaveda](#). India is the land of pharmacy and known for **Ayurvedic** medicine. Hemp was mentioned in **Ayurveda**, as one of the medicinal plant used for many diseases. There are many growing Indian companies ([Bombay Hemp Company](#), [BOHECO](#), [Sattiva](#), [Hemp Fabric Lab](#), [Vedi](#), [Happy Hemp](#), [SUI](#), [Its Hemp](#), [Bhu:Sattva's](#), [Health Horizons](#), [Hemis](#), [Hemp Republic](#), [Hempsters](#), [B.E. Hemp](#), [India Hemp Co., Inc.](#), [India Hemp Organics](#), [Its Hemp](#), [The Trost](#), and [Gin Gin](#)) involved in promoting the **Indian hemp products**, marketing, R & D research, cultivation, harvesting, processing, manufacturing, trading, wholesaling, retailing, innovating, advocating and motivating customers across India and around the world. This will help to boost the Indian economy and increase the productivity of the **Indian hemp (fiber type)**.

Keywords: Ayurveda, Cannabis, Cannabinoids, Ethnomedicine, Folk medicine, Hemp, Phytomedicine, India, Industrial hemp (fiber type), Traditional medicine, Δ9-tetrahydrocannabinol (THC).

INTRODUCTION

Ayurveda is a science of life with a holistic approach to health and personalized medicine (1-9). It is one of the oldest Indian medical systems, which comprises thousands of medical concepts and hypothesis (1-9). Hemp was mentioned in **Ayurveda**, as one of the medicinal plant used for many diseases (1-9). **Ayurveda**, the traditional Indian medicinal system remains the most ancient yet living traditions with sound philosophical and experimental basis (1-9). **Ayurveda** is an age-old practice of medical treatment meaning "**The Science of Life**". The history of **Ayurveda** goes deep in the **Indian roots**. It was developed more than 5,000 years ago in India (1-9). Ayurveda is a contemporary and alternate form of medicine (1-9). According to the World Health Organization, about 70–80% of the world populations rely on nonconventional medicines mainly of herbal sources in their healthcare (1-9). Public interest for the treatment with complementary and alternative medicine is mainly due to increased side effects in synthetic drugs, lack of curative treatment for several chronic diseases (1-9; 82-85).

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 **Vata** or Vayu (ether or air), **Pitta** (fire and water) and **Kapha** (phlegm or water and earth) (1-9). India is a land steeped in faith and mysticism (1-9). Interestingly, Ayurveda has the ability to treat many chronic diseases such as cancer, diabetes, arthritis, and asthma, which are untreatable in modern medicine (1-9). Unfortunately, due to lack of scientific validation in various concepts, this precious gift from our ancestors is trailing (1-9).

INDUSTRIAL HEMP (FIBER TYPE) HEMP: IMPORTANCE



Figure-1: Industrial hemp (fiber type), Cannabis sativa



Figure-2: Industrial hemp (fiber type), Cannabis sativa in the field.

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Figure-3: The robust growth of Industrial hemp (fiber type or grain type).

Industrial hemp (fiber type), *Cannabis sativa* (Figure-1, 2, 3) belongs to the family, **Cannabaceae** is considered as one of the oldest plants of Asian origin particularly from India cultivated to provide nutritional and medicinal benefits (10-71; 84-85). ***Cannabis sativa* L. is one of the medicinal plant known for fibre, medicinal, psychoactive agents and oil.** Industrial hemp (*Cannabis sativa* L.) is an emerging food and fibre crop (10-70). It is a **non-drug variety** of *Cannabis sativa* with low **A9-tetrahydrocannabinol (THC)** content of less than **0.3 per cent (10-71) (10-82)**. Industrial hemp (*Cannabis sativa* L.) with proven applications, ranging from the textile, construction paper industries, nutritional, pharmaceutical and cosmetic industries (10-70). 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 (10-70). Ayurveda, combining the Sanskrit words for life and knowledge, is a system of medicine intertwined inextricably with these traits (1-10). More prominently known as **Vijaya in Ayurveda**, medical cannabis has been one of the hottest topics of discussion (1-9). Vijaya is used in different Ayurvedic classical formulations. The formulations are classical as they are mentioned in the Ayurvedic texts thousands of years ago. Any other new formulations are patented and are known as Proprietary products (1-85).

Industrial hemp (fiber type), *Cannabis sativa* (Figure-1, 2, 3) has been used by innumerable ethnic societies in Asia. **Uttaranchal** (India) is an ethnic region where the plant is a part of the local culture (8-29). The increased penetration of medical products in the market is due to technology-based solutions. The goal is to build a technology that reaches the right people with the correct medication. The preparation of **Ayurvedic** formulations has to be as per the rules and regulations of the legislation. Cannabis contains different types of compounds i.e. cannabinoids, terpenoids, flavonoids, etc. There are more than 113 types of cannabinoids present in cannabis out of which CBD and THC have therapeutic effects. Cannabis is defined as the **Ayurvedic Drug** – Bhang (except seeds), Siddha Drug – Ganja (except seeds), and Unani Drug – Bhang and Charas. Various studies are being conducted on medical cannabis (1-78).

INDUSTRIAL HEMP (FIBER TYPE) HEMP : BOTANY

Industrial hemp (fiber type) (Figure-1, 2, 3) is a **short-day plant, which means it requires a long period of darkness to form flowers** (13-70, 82). Short-day plants develop flowers only when the day length is less than about 12 hours. Its flowering is delayed by long days and hastened by short days (82-85). Shorter days then typically trigger flower development. **Industrial hemp (fiber type)**, is primarily **dioecious**, that is, the pollen-bearing parts are found in one plant and the seed-bearing flowers on another (20-67) (83). Cannabis has a **diploid genome** ($2n = 20$) (82). The male

and female plants are not distinguishable before flowering (20-50, 83). The male inflorescence can be identified by the development of round, pointed flower buds with five radial segments, while the female inflorescence can be identified by the presence of calyx (15-70, 82). **Male plants die shortly after flowering** (82). The female plants live 3 to 5 weeks until seed is fully ripe (15-70, 82). In a dioecious crop, the number of female plants is 10 per cent to 50 per cent higher than the number of male plants (82). There are a few monoecious cultivars that have both male and female flowers on the same plant (11-70, 82-85).

The Narcotic Drugs and Psychotropic Substances Act, 1985 (**NDPS, Act** and the Drugs and Cosmetics Act, 1940), Government of India, New Delhi, defines the scope of medicinal cannabis. Under the Drugs and Cosmetics Act. The medicinal use of cannabis has been recognized and falls under the **“List of poisonous substances under the Ayurvedic (including Siddha) and Unani Systems of Medicine” in Schedule E1 of Drugs and Cosmetics Rule, 1945.**

CANNABIS SATIVA (HEMP) : FSSAI REGULATION

In 2017, the FSSAI (FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA), Government of India, New Delhi issued notices to hemp manufacturers, highlighting that the sale of such products under the FSSAI label is **illegal**. After, 4 years and a couple of successful hemp businesses later, it has come around on **15th November 2021 FSSAI, recognized hemp seed and hemp seed products as food** (10-29). The notification regulates and allows for sale of products derived from 'non-viable seeds of the cannabis sativa/other indigenous cannabis species' (10-29). And the cultivation has to, as usual, comply with the NDPS and state laws (9-30).

Medical cannabis (marijuana type) and **Industrial hemp (fiber type)** (Figure-1, 2, 3) are two varieties of the plant *Cannabis Sativa* (1-80). **Industrial hemp (fiber type)** refers to the non-intoxicating cannabis harvested for the industrial use of its products (1-80). In **Medical cannabis (marijuana type)**, tetrahydrocannabinol or THC, the psychoactive compound that makes one feels “high,” measures at about 17-30%, whereas **Industrial hemp (fiber type)** has to contain less than 0.3% THC to be sold legally (1-80). **Industrial hemp (fiber type)** is used in a variety of commercial and industrial products in India: textiles, paper, bioplastics, building materials, body care, and now Gin-Gin (Figure-1, 2, 3) (72-85).

CANNABIS SATIVA: MEDICINAL VALUE

According to **Ayurveda** Cannabis was extensively used to treat a large kind of ailments such as **sleep problems (insomnia, induce sleep, soporific); Arthritis and pain (gout, rheumatism, cancer, and arthritic pain); Gynecological disorders (dysmenorrhea, menorrhagia, expedite delivery); Sexual problems (erectile dysfunction, sex stimulation, low libido, pleasant sensation); Gastrointestinal problems (diarrhea, dyspepsia, strangulated hernia, poor digestion, dysentery); Neuropsychiatric and CNS (paralysis, psychosis, insanity); Infections and respiratory problems (tetanus, wound, tuberculosis, cough, asthma); Cancer; and other ailments including hypertension, headache, itch, increases bile secretion, abortifacient, dandruff, fever, and urinary problems** (1-85).

HEMP PRODUCTS: INDIAN START UP BIOTECH COMPANIES

Following is the list of Indian companies (**Bombay Hemp Company**, BOHECO, **Sativa**, **Hemp Fabric Lab**, VEDI, Happy Hemp, SUI, ItsHemp, **Bhu: Sattva's**, Health Horizons, Hemis, Hemp

Republic, Hempsters, B.E. Hemp, India Hemp Co., Inc, India Hemp Organics, ItsHemp, Health Horizons, Hemis, TheTrost,and Gin Gin) involved in promoting the **Indian hemp products** marketing, research, cultivation, harvesting, processing, manufacturing, trading, wholesaling, retailing, innovating, advocating both across the nation and around the world.

1. Bombay Hemp Company

Bombay Hemp Company is widely known as '**BOHECO**', has partnered with The Hemp Factory, India's first hemp-based cloud kitchen (72-80). With BOHECO as collaborators, this vision to get India to use hemp and its products to its full potential feels more realistic than ever. **Bombay Hemp Company**, also popularly known as **BOHECO** (Bo-hee-ko) is a privately held, social enterprise headquartered in Mumbai, India. **BOHECO** was founded to research on and promote **industrial hemp**, the super crop of our era in India. **BOHECO** was formally registered under The Companies Act (1956) on the 19th of January, 2013, with the operations ranging from research, cultivation, harvesting, processing, manufacturing, trading, wholesaling, retailing, innovating, advocating, creating a market for and promoting **Indian industrial hemp** both across the nation and around the world (72-80). **BOHECO** use public-private partnership, contractual farming and processing, subsidiaries and collaborative research models, all with an aim to build an industrial hemp ecosystem or industry in India. The establishment includes the superfood, and hemp in dishes made for everyone. Removing the notion of hemp being included only in typically healthy meals, The Hemp Factory caters to various kinds of foods. The aim of this **cloud kitchen** is not to solely produce hemp-infused foods, but also to further raise awareness about how hemp can help with several ailments — if not as a cure, but for management and on the journey to better overall health. **Located** at Unit #2, Cama Industrial Estate, Sun Mills Compound Rd, Lower Parel, **Mumbai**, Maharashtra 400013, India. Further, **BOHECO CANNABIS HEALTH & WELLNESS CENTER** 295, 100 Feet Road, Next to Glen's Bakehouse, HAL, 2nd Stage, Stage 3, **Indiranagar, Bengaluru, Karnataka - 560038**.

2. Hemp Fabric Lab

The ready-made clothes are always a more convenient option. **Hemp Fabric Lab** is a brainchild of **BOHECO** (Bombay Hemp Company). So for those who like complete control of the kind of clothes they wear, Hemp Fabric Label, an initiative of BOHECO, is an online store for sustainable fabrics made from hemp. **BOHECO** is an agro-based enterprise re-imagining the future of Indian agriculture and sustainable living with **hemp as its lens** (72-80). The goal is to educate and advocate for **industrial hemp**, promote its benefits to society and assist local farmers in cultivating the crop by providing the best seeds and practices in cultivation techniques for poverty alleviation and rural development (72-80). **Their fabrics** come in a variety of colours, specific for different applications. Furthermore, also choose the type of fabric of interest - handloom, knit, or woven. With hemp at the core of its production process, **Hemp Fabric Label's** offerings are vast and can be suited to fit current market needs (72-80). The Hemp Fabric Lab are dedicated to providing **100% hemp fabric and blends with other sustainable fibers like organic cotton**, Tencel, wool, silk, yak hair, nettle, Bamboo, Lyocell (72-80). Hemp Fabric Lab is located at Unit #2, Cama Industrial Estate, Sun Mills Compound Rd, Lower Parel, **Mumbai, Maharashtra 400013** India (72-80).

Cannabis as a plant, and its flowers and buds (popularly known as 'Ganja') are regulated as a "narcotic drug" under The Narcotic Drugs and Psychotropic Substances Act, 1985 (NDPS Act),

but its leaves (popularly known as 'Bhang') seeds and fibres when separated from the plant, or when separated, are not regulated as a 'narcotic drug' under NDPS Act (72-80). **The fibre of the plant which is used to make textiles is made from the stalk of the plant post extracting the fibre through a technique called retting** (72-80).

The provisions of the Act completely exempt the fibre and the uses of the stalk and can be freely used for textile applications. Therefore, **Hemp Fabric Lab** are proud to announce that they have successfully attained the permission to cultivate Industrial Hemp in India by collaborating with the State Government of Uttarakhand (72-80). This has enabled **Hemp Fabric Lab** to be one step closer to the 100% **"Make in India"** initiative by producing Hemp fabrics from fibre to fabric (72-80).

3. Gin-Gin (Hemp-Gin)

Gin Gin is the newest **spirit** to join India's burgeoning Gin scene. Based in **Goa**, Khanna's ingredients come from across India, and amazingly and delivered via Amazon during lockdown in India (72-80). Manufactured entirely in **Goa, GinGin** sourced all its botanicals and ingredients locally from India. Made by 24-year-old **Shubham Khanna**, it took two years and 40 recipes to get the product right, and ready to expand the marketplace (72-80). **Made up of nine unique botanicals, including hemp, Himalayan juniper, coriander, lavender, rosemary, caraway seeds, cinnamon, lemongrass, and butterfly pea flower, they have branded themselves as India's only single-shot distilled 'hemp Gin'** (72-80). In this regard, adding hemp as a botanical would help pique a consumer's curiosity (72-80). Currently, Gin is thriving in India and the most recently, Terai from Rajasthan. Gin Gin is also out of Goa, hit markets across India (72-80). Gin Gin is a soft drink launched at a few bars and hotels across Goa and is now hitting the market in India's sunshine state, **Rajasthan** (72-80). In a country populated by rum and beer drinkers, Gin had always remained the dark horse (72-80). Shubham Khanna's GinGin entered the market with a characteristic new to in the Indian space – the addition of hemp. The addition of hemp seeds themselves added a complex flavour. Gin Gin is also India's first, and currently only, **hemp Gin**.

The seeds are a part of the **Industrial hemp (fiber type)**, *Cannabis Sativa* plant that contains none too little Tetrahydrocannabinol (THC), the substance that produces psychoactive effects. GinGin would be able to provide with the mind-altering feeling that Cannabis provides (72-80). In fact, it is high in proteins, fibre and healthy fatty acids. Completely legal and approved by authorities in India, hemp seeds are not different from chia seeds (72-85).

4. Satliva

Satliva is a **Bangalore, Karnataka**, India -based hemp shop boasts of the finest range of luxury **chemical-free skin and body care products** (72-80). All their products are a combination of hemp oil and other natural cold-pressed oils made freshly on order (72-80). **Satliva** believes that **Nature is the best Nurture** and with that, it brings sustainability home (72-80). A hemp shop based out of Bengaluru, Satliva sources their raw material specially from the foothills of Himalayas (72-80). The brand offers a range of the finest chemical free products – all made with a combination of **hemp oil** and other natural cold pressed oils (72-80).

5. Vedi

Vedi works with the intersection between **Ayurveda and hemp**. It calls hemp a 'jewel in the court of Ayurveda', and considers the infusion of cannabis into Ayurveda quite essential (1-9; 10-80).

Recognising the role that it has played in the historic practice of Ayurveda, VEDI aims at using hemp to help India find its Ayurvedic roots (1-80). **Vedi Herbals** is in the forefront of holistic healing and Ayurvedic care (1-9; 72-80). The pioneer of cannabis medicines in India, **Vedi** has brought the versatile **healing properties of Cannabidiol (CBD)**, oil to the people and has made natural healthcare accessible (1-49). VEDI also makes **hemp oil products** for hair and skin care, for a greener lifestyle. The journey of VEDI began in 2016, when interacted with the tribal populace in Odisha while travelling (72-80). Then wonderstruck by how farmers and their families had beautifully internalized the principle of **Ayurveda** and were living the ideal life (72-80). **Vedi Herbals** is a young and fast-emerging enterprise for **Herbal Healthcare and Body care products**, based in India (72-80).

6. Bhu: Sattva

A **Gujarat-based organic** clothing brand that makes use of a variety of sustainable fibres **including hemp** (72-80). **Bhu:Sattva's** core philosophy works in the opposite direction as that of fast fashion. Known for its vibrant colors that seem to be oozing out of nature's offerings like beetroots, pomegranate, tree leaves etc (72-80). **Bhu:Sattva's designs** are timeless and deeply rooted in the Indian ethos. Known for its smart cuts, vibrant colours, and eclectic designs, Bhu:Sattva is one of the few **hemp-using organic brands** in the country that has been around for almost a decade (72-80).

7. B.E Hemp

Making ethically sourced hemp products available to all at affordable prices at **B.E Hemp**. Furthermore B.E. Hemp covers all bases when it comes to the hemp industry. B. E-Hemp sell products, affiliate themselves with other brands, cater to wholesale needs and also wish to push the hemp message by narrating their (and others') journey in the Cannabis domain (72-80). **This Bengaluru, Karnataka**-based organisation's original hemp products include All-Natural Hemp Soap, All-Purpose Healing Salve and Unbleached Hemp Paper (72-80). B. E-Hemp will also find stationery, wallets, beanies and skincare products on their website (72-80). Bonus points to B.E Hemp for their smart use of words such as 'Add To Stash' and 'Blaze Through Our Shop' – which is a good wordplay when we see one (72-80).

8. BOHECO

Perhaps one of the more well-known Hemp companies, **BOHECO** has truly made its mark as a champion of sustainability in the Indian market (72-80). The company assists local farmers in cultivating the crop by providing optimum seeds and cultivation techniques (72-80). From thereon, **BOHECO** ensures that it builds a sustainable business model for economic, environmental and social impact (72-80). In partnership with retreat **Poonthottam Ayurvedasram in Kerala**, they provide **Ayur-Cann** therapies. One should would book a stay immediately. **Poonthottam Ayurvedasram** in **Pallakad, Kerala** is Asia's first **Ayurvedic-cannabis wellness retreat** (72-80). In partnership with the Bombay Hemp Company, this holistic retreat focuses on **Ayurvedic therapies, yoga, meditation, diet plans**, and more. Assisted by hemp or cannabis supplements (if need), guests may be encouraged to incorporate all of this into their daily lives after a consultation.

BOHECO, India's **premier Industrial Hemp & Medicinal Cannabis Company**, has constantly made efforts towards bringing an assortment of haute couture sustainable organic fabrics, yarns and blends to the Indian populace (72-80). **BOHECO** has a range of

apparel that all easily blend into the modern day aesthetic of wardrobe (72-80).

9. The Trost

The Trost' when translated to German refers to solace (72-80). Their sun grown hemp is ethically sourced and comes in the form of hemp hearts, oil, protein powder, and more. With a promise to transport to a place of bliss, the Trost also gave India its **first hemp cigarettes** (72-80).

10. Its Hemp

Its-Hemp has got it all apparel, food, accessories, gifts, furnishing, and wellness products (72-80). Segregated under hemp, cannabis, and **Ayurvedic** cannabis, one can pick products based on their needs (72-80). They cater to friends parties

Its Hemp has got apparel food, accessories, gifts, furnishing, wellness products. They even offer subscription-based purchases of products such as oils and powders (72-80). Apart from great products, **Its Hemp** can also educate themselves about the Cannabis plant and hemp and where it stands in India. They even have a **Hemp Starter Kit** for those who are just venturing into this sphere (72-80). Its Hemp has **'Pet Products'** section that extends hemp care to furry loved ones. The hemp used is harvested in the Himalayas in the purest form. Its products range into **skincare** as well as wellness (72-80).

11. India Hemp Organics

Rohit Kamath and **Loveena Sirohi**, the brains behind **India Hemp Organics** where Cannabis is perceived and consumed in the country. Medicinal products catering to pain relief, better sleep, and reducing stress were marketed by **India Hemp Organics** (72-80). **India Hemp Organics** also retailed hemp hearts, hemp powder, and hemp seed oil. **Industrial hemp** (fiber type)- Cannabis sativa is a sustainable, eco-friendly and multipurpose medicinal plant and this variety is known for storehouse of protein, fibre and oil (13-80). Hemp is an important super food that contains plant-based proteins. They also has a great source of healthy fats and essential amino acids (72-80). When consumed daily, they improved overall cognitive and physical performance (10-80). They also contain significant amounts of protein that aids with muscle-building as well (72-80). **Loveena Sirohi, Co-Founder and Director, India Hemp Organics**, who provide sustainably sourced, non-GMO, 100% plant-based, and preservative-free hemp (72-80). However, the amount of protein and healthy fats in the hemp hearts and protein powders can cause digestive issues if consumed improperly. "To avoid any issues, **India Hemp Organics** recommended eating 2 to 3 tablespoons of either hemp hearts, hemp powder, or hemp seed oil a day. Just 3 tablespoons of any hemp product contains up to 9.5 g of protein which is almost as much as a single egg (72-80). **CannaBliss'**, that consists of Cannabis leaf oils used for several purposes – neurological problems, pain management, insomnia, side-effects of chemotherapy apart from providing daily well-being.

12. India Hemp & Co.

Sisters **Jayanti and Shalini Bhattacharya** founded **India Hemp & Co.** to bring together their passions of nature, health, art and business (72-80). Apart from hemp products, the brand also gives recipes for guidance about hemp products. A well-rounded approach to integrating hemp in one's daily lives. As seen on Shark Tank, the brand's courtesy also extends to dogs in the form of treats (72-80). They offer Hemp Seed Trail Mix, Hemp Protein Powders, Hemp Seed

Oil and more (72-80). They even have a hemp pack dedicated to home chefs to help them add a new dimension in their dishes. Additionally, they have a few hemp recipes up on their website as well (72-80).

13. Hempsters

Specialising in body care, [Hempsters](#) aims at offering their customers luxurious, natural and completely **hand-made hemp products**. They make sure to ingrain organic and age-old recipes, too. Hempsters is a perfect mixture of the natural aesthetic and sustainable skin care. Their products are available on Amazon.

14. Hemp Republic

Having chosen to be a part of the nationwide hemp revolution, [Hemp Republic](#) caters to a variety of consumers across India. The company is based in **Telangana** and manufactures hemp **fabrics, paper, yarn**, and more. All of their products are made in India and [Fairtrade](#) certified among other accreditations.

15. Hemis

[Hemis](#) successfully ventures into lifestyle products such as apparel, accessories, furnishing, footwear and stationery. Their products use raw materials that are 'responsibly sourced, earth-friendly and completely organic. Not only does Hemis provide guaranteed quality, but it also does not compromise on the design and style in any way.

16. Health Horizons

[Health Horizons](#) will provide a superfood in diet and improve overall well-being with **hemp as food**. Additionally, the [Health Horizons](#) also provides delicious recipes using hemp products and hemp information (72-80). Apart from Hemp Sativa Nubs, Hemp powder and Hemp sativa oil in their armoury, and the company also offers personal care products such as Lavender & Hemp Face Cream, Aloe Vera & Hemp Body Butter and cold pressed Hemp Oil (72-80). [Health Horizons](#) not only market quality hemp products, but also important to educate its customer through its 'Hemp Updates' and 'Hemp In The Media' sections. (72-80).

17. SUI

Hemp being their '**Star Fabric**' is an integral element of most of [SUI designs](#) and helped to ensure that every new collection has a unique 'green' heart (72-80). [SUI's](#) latest collection is inspired not just by the raw beauty and cool coast of California. In addition also by the importance of long-term survival of such natural beauty which is only possible in a world where production is inherently responsible.

18. Happie Hemp

[Happie Hemp](#), a biotechnology company is developing Ayurvedic products derived from Cannabis leaf and [Hemp](#) leaves (1-80). Entrepreneurs today are focusing on maximizing the efficacies of Ayurveda (1-78). Enthusiasts are coming forward to expand the tremendous potential of medical [cannabis](#) (10-80).

CONCLUSION

Industrial hemp (fiber type) is a crop with multiple uses (**Figure-1, 2, 3**). Its exceptional functional properties, rapid

renewability and low environmental footprint are driving a number of markets with strong growth potential. In comparison with other bast fibres (such as from flax, kenaf, jute or ramie), **hemp fibre** has excellent fibre length, strength, durability, absorbency, anti-mildew and anti-microbial properties. **Hemp offers super absorbency**. This quality is desirable for oil and gas cleanup, livestock bedding and personal hygiene markets. Hemp is very high in tensile strength, strength-to-weight ratio, flexural strength and ability to rebound are desired benefits in bio-composites for automotive parts, aerospace and packaging. The textile, paper and building markets have interest in some specialty applications due to hemp's durability, anti-microbial, acoustic and aesthetic properties. There are many Indian companies (**Bombay Hemp Company**, BOHECO, **Satliva**, **Hemp Fabric Lab**, Vedi, Happy Hemp, SUI, ItsHemp, **Bhu:Sattva's**, Health Horizons, Hemis, Hemp Republic, Hempsters, B.E. Hemp, India Hemp Co., Inc, India Hemp Organics, ItsHemp, Health Horizons, Hemis, TheTrost, and Gin Gin) operations ranging from research, cultivation, harvesting, processing, manufacturing, trading, wholesaling, retailing, innovating, advocating, creating a market for and promoting Indian industrial hemp both across the nation and around the world. This will boost Indian economy and also hemp products in the market.

Today, **the cost of health care** is constantly rising, and affecting people's ability to afford health coverage. **Drug-based** medicines are being unaffordable for economically poor countries like India and problematic in the Western countries due to numerous side effects. **The drug should be the last rather than first mean of treatment**, beginning with the natural healing method like Ayurveda. One of the **Ayurvedic** treatment modalities such as **Panchkarma** can remove disease before its manifestation. Having all the above beauties, **Ayurveda is still lagging** behind because of the lack of scientific evidence in many cases and poor research methodology. There is a ray of hope that in near future, **hemp based healthcare** products will be in the market and customer demand for hemp products is increasing. It is also a need to perform more biological evaluation towards establishing therapeutic guidelines of Cannabis and Cannabinoids and to provide a strengthened pharmacological perspective about the prospects and challenges of Cannabis use in the future.

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