International Journal for Pharmaceutical Research Scholars (IJPRS)

V-3, I-1, 2014 ISSN No: 2277 - 7873

REVIEW ARTICLE

Review on Ethanopharmacological Study of Hibiscus Cannabinus

Babita Gautam*, Anshubala, Arunbala, Rashmi Pandey, Chetan Kr Dubey

Ramashwaram institute of technology and management luck now Uttar Pradesh, India.

Manuscript No: IJPRS/V3/I1/00096, Received On: 23/02/2014, Accepted On: 27/02/2014

ABSTRACT

In India, herbal treatment is very popular since ancient times in this article there is a description of a herbal plant which having some important constituents, which is play an important role to cure many diseases like diabetes, hyperlipidemia, cytoprotective activity, anti-ulcer activity and very common stress which is very common in youngsters now these days to treat this diseases there is lots of medicine is available in market which is useful but they have side effects and cause serious health problems. In the other way herbal medicines are safe in both sides, that's why in this particular review article I will emphasis on the naturally occurring products which may be beneficial for some diseases.

KEYWORDS

Hibiscus cannabinus plant, Hematinic, Anti diabetic, Hyperlipidemic, Cyotoxic, Anti-ulcer, Hepatoprotective, Immunomodulaory activities

INTRODUCTION

Hibiscus cannabinus grown in tropical and subtropical areas and having non wood lignocellulosic property. Kenaf have two most important parts in plant i.e bast and core. Bast is used for making attractive ornaments, rope, Cordage, Canvas, Sacking, Fishing nets, coarse cloth, Paper making, potherb, Carpet backing, twine and many others.[1] This is a woody to herbaceous annual low cost natural fiber with a deep penetrating root through to be native in India. It's mostly unbranched and rapidly reaches maturity, in only 4-5 months the plant can grow to 2-5 meters tall leaves are individually stalked and lobed to some degree. Kenaf is cultivated in parts of southern Italy as a break crop where there is no need for irrigation. The crop is show in April & grows over the wet or summer season for 90-160 days to flowering or maturity when it is harvested.

***Address for Correspondence:**
Babita Gautam
M. Pharma Student,
Ramashwaram institute of technology and management luck now,
Uttar Pradesh, India.
E-Mail Id: babita.gautam26@gmail.com

Due to the global demand for fibrous material, worldwide shortage of trees in many areas and environmental awareness, non-woods have become one of the important alternative sources of fibrous material for the 21st century. There is a wide variety of non-wood plant fibers that can be used for papermaking.[2] Non-woods, such as biogases, wheat and rice straws, bamboo, and kenaf are being used in the manufacture of pulp and paper all over the world Kenaf has received the greatest attention because of its greater adaptability and easy of handling than allied fibre crops. Kenaf yields approximately three to five times as much fibre as southern pine Now China, India, and Thailand accounts for 95% of world production of kenaf and in 2005-2006 total kenaf production was 0.33 million tons of which India, China and Thailand produced 42%, 25% and 11%, respectively, and the rest 22 % was produced by other countries of the world.[3] Kenaf was first domestically used in South Africa. India has produced and used kenaf for the last 200 years, while Russia started producing kenaf in 1902.[4] In the United States

kenaf production began during World War II to supply cordage material for the war effort.[5] Then in the 1950s and 1960s as USDA researchers were evaluating various plant species to fulfill future fiber demand in the US, it was determined that kenaf was an excellent cellulose fiber source for a large range of paper products(newsprint, bond paper and corrugated linear board).[6] More recent research and development projects in the 1990s have demonstrated the plants suitability for use in (building materials particle boards of various densities and thickness with fire and insect resistance), adsorbent, textiles and recycled plastics.[7]

Hibiscuss cannabinus is one of the world's most potential sources of fiber in the cottage industry. Recently. Kenaf has been increased throughout the world for its elevated fiber content.[8] Kenaf is a rapid growing crop and has high potential to be used as an industrial crop and contains higher fiber materials or lignocellulosic material.[9] Kenaf is relatively free from damaging pests and diseases, at present only one pesticide and two herbicides exist for control within the crop. However, susceptibility to a wide range of diseases is visible.

Harvesting

The harvesting procedures for kenaf are to be a thing important for commercialization. The harvest method is involving location, availability of the equipment, processing method, and finally for using. The last 6000 years, kenaf has consistently been hand-harvested for use as fiber crop like rope, twine, and sackcloth.[10] Usually plants were still actively growing, nearing or already flowering at the time of harvest. Retting is the process, usually involving moisture with bacteria or chemicals, to remove the unwanted bark material from the kenaf fiber strands within the bark. Kenaf was retted by natural processes that use primarily aerobic (air loving) bacteria, unlike water-retting of flax that is carried out primarily by anaerobic bacteria and various fungi. The whole stalk kenaf (bark and core still attached), or only the bark portions, are tied in bundles and placed in ponds, canals, or slow-moving streams to allow the bacteria to digest the plant material around the bark's fiber strands (bast fibers). Bark, which contains the bast fiber (phloem tissues), and the core contains core fibers (xylem tissues), are separated by meristematic cell, the vascular cambium. The vascular cambium is responsible for secondary growth, increase in girth, by generating new phloem tissue (sieve tubes) outwardly and new xylem tissues (core fibers) inwardly. The phloem cells transport a food material which is produced by photosynthesis and the xylem vessels transport water with in the plant. The presence of the vascular cambium interface between the kenaf bark and core results in easy separation between these two plant components as long as the plant has been recently harvested or is not fully dried.[11] Once drying has occurred, the bark will adhere more aggressively to the stalk core and bast fibers will also be more difficult to separate from the non-fibrous material in the bark. In addition, drying the bark while either attached to or separated from the stalk will impede the water-retting process. Although the natural water-retting by bacteria is still used throughout many portions of the world, uniformly.[12]

Morphology

Hibiscus cannabinus (Malvaceae) is an annual or perennial herbaceous bush and has several forms with varying colors of flowers. It is native to China and grown widely as an ornamental plant throughout India. The flowers are considered emollient, and an infusion of the petals is used as a demulcent. Its decoction is given in bronchial catarrh in India. Previous studies show that the plant possesses ant complimentary, antidiarrhetic and antiphologistic activities.[10] The leaves and flowers have been found to be effective in the treatment of heart disorders. No reports are available on the ant diabetic activity of Hibiscus cannabinus leaves. Hence, the present study focuses on the scientific investigation of hematinic activity of Hibiscus cannabinus leaves.

Figure: 1

Botanical Classification[13]

Kingdom: Plantae

Unranked: Angiosperms

Unranked: Eudicots

Unranked: Rosids

Order: Malvales

Family: Malvacae

Genus: Hibiscus

Species: H.cannabinus

Vernacular Names[14]

Hindi: San, Patsan, Jute, Sanai.

English**:** Hemp, Kenaf, Indian hemp, brown hemp.

Leaves

Kenaf (hibiscus cannabinus) is a plant in the malvacae family. Hibiscus cannabinus is in the genus hibiscus & is probably native too southern asia, though its exact natural origin is not known. The name also applies to the fibre obtained from this plant. It's an annual or biennial herbaceous plant growing to 1.5-3.5 m tall with a woody base. The stems are 1-2 cm diameter, often but not always branched. The leaves are 10-15 cm long variable in shape, with leaves near the base of the stem being deeply lobed with 3-7 lobes, while leaves near the top of the stem are shallowly lobed or unlobed lanceolate.[15]

Figure: 2

Seeds[13]

Figure: 3 Figure: 4

Seed Oil Contains

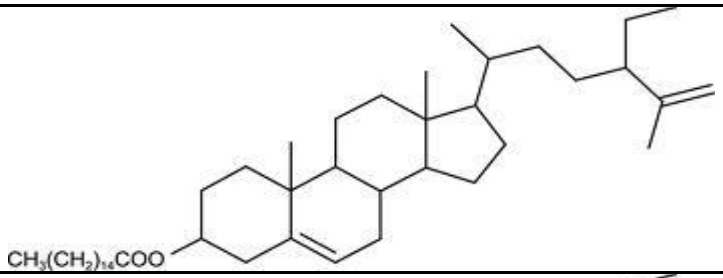
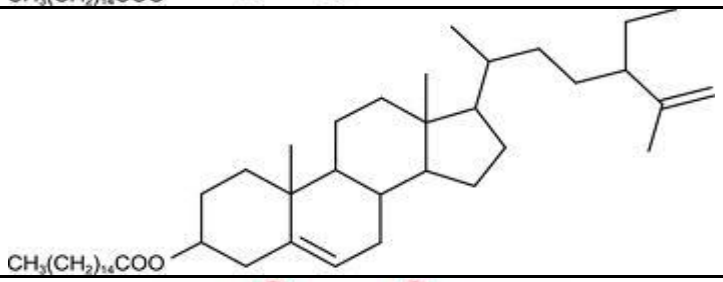
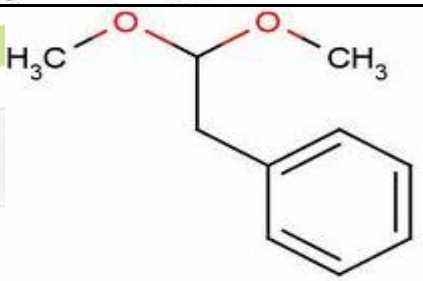
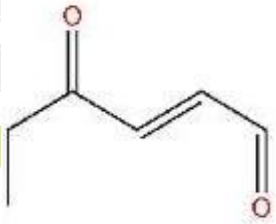
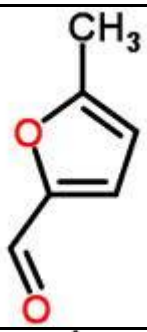
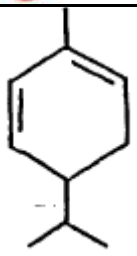
- Palmitic acid: 19.1%
- Oleic acid: 28.0% (Omega-9)
- Linoleic acid: 45% (Omega-6)
- Stearic acid: 3.0%
- Alpha-linolenic acid: 3% (Omega-3)

Seeds contain radium, thorium, and rubidium, and fatty oil like arachis oil.[16]

Chemical Constituents

The research confirmed the allelopathic activity & discovered the species which often cause antifungal property of essential oil. The major component includes: (E)-phytol (28.16%), (Z)-phytol (8.02%), N-nonanal (5.70%), Benzene acetaldehyde (4.39%), (E)-2-hexanal (3.10%) and 5-methyl furfural (3.00%).Earlier researchers also evaluated the composition of the kenaf leaf, specifically the leaf volatile. The authors reported that the presence of 10 component, including, Ethyl alcohol, Isobutyl alcohol, Limonene, Phellandrene.

Structures[14]

Chemical Name	Chemical Structure
(E)- phytol	
(Z)- phytol	
Benzene acetaldehyde	
(E)-2-hexenal	
5 – methyl furfural	
Phelladrene	

Uses[17]

Traditional Uses

- Rope
- Cordage
- Canvas
- Sacking
- Fishing nets
- Cloth
- Papermaking
- Potherb

Medicinal Uses

- Anti inflammatory activity
- Immunomodulatory activity
- Anti oxidant activity
- Hepatoprotective activity
- Anti diabetic activity
- Fungi toxic
- Anti hyperlipidemic activity

Activities

Haematinic Activity[18]

Study on hemolytic anemic rats induced by phenylhydrazine showed the leaf extract of H cannabinus induced a significant increase in RBC count, Hb concentration and pack cell volume.

Antioxidant Activity[19]

Study results suggest that the leaves of H cannabinus possess erythrocyte protective activity against drug (induced with drug carbon-tetrachloride or paracetamol) oxidative stress.

Immunomodulatory[20]

Study showed crude extract of H cannabinus fresh leaves significant suppressed TNF-a production and mRNA expression of IL-3 and IL-12, with induction of expression of a potent cytoprotective molecule.

Hepatoprotective[21]

Aqueous leaf extract showed significant hepatoprotective activity against carbon tetrachloride and paracetamol induced damage evidenced by absence of necrosis in liver cells of pretreated rats. Inhibition of lipid peroxidation is suggested as a possible mechanism.

Anti-Diabetic[22]

Study of methanol extract of *H. cannabinus* in streptozotocin-induced diabetic rats showed lowering of blood glucose. Photochemical yielded phytosterols, flavonoids, and glycosides.

Anti-Hyperlipidemic[23]

50% hydro alcoholic extract of HC leaves showed a strong dose-dependent ant hyperglycemic effect with decreasing order of TC, TG, LDL-C, VLVL-C and TBARS. Also, the extract markedly prevented liver micro vesicular steatosis in hyperlipidemic rats

Cytotoxic Activity[24]

The antimicrobial and cytotoxic activities of six lignans isolated from the core and bark acetone extracts of Hibiscus cannabinus have been investigated. The compounds did not exhibit antimicrobial activity.

Anti-ulcer Activity[25]

Gastric ulcer, one of the most widespread, is believed to be due to an imbalance between aggressive and protective factors. [26] The gastric mucosa is continuously exposed to potentially injurious agents such as acid, pepsin, bile acid, food ingredients, bacterial products and drugs.[27]

CONCLUSION

In this article there is brief information on hibiscus cannabinus (Kenaf) plant which is very use full in comparison to other. This plant having lots of activities inside their leaves like antioxidant, Immunomodulatory, ant diabetic and many more activities and there bark is used for making rope, toys, net, cloth, papermaking etc.

ACKNOWLEDGMENT

We would like to thank the University for providing the resources to carry on our research and our teachers and friends for their support.

REFERENCES

1. Zampaloni, M., Pourboghrat, F., Yankovich, S. A., Rodgers, B. N., Moore, J., Drzal, L. T. & Misra, M. (2007). Kenaf natural fiber reinforced polypropylene composites: A discussion on manufacturing problems and solutions. *Composites Part A: Applied Science and Manufacturing*, *38*(6), 1569-1580.
2. Sabharwal, H. S., Akhtar, M., Blanchette, R. A., & Young, R. A. (1994). Biomechanical pulping of kenaf. *Tappi Journal*, *77*(12), 105-112.
3. Dempsey, J.M., (1975). *Fiber Crops*. Rose Printing Company, Tallahassee, FL.
4. Wilson, F. D., and Menzel, M. Y., (1964). Kenaf (*Hibiscus cannabinus L.*), Roselle (*Hibiscus saadariffa L.*). *Economic Botany* 18, 80-91.
5. White, G.A., D.G. Cummins, E.L. Whiteley, W.T. Fike, J.K. Greig, J.A. Martin, G.B. Killinger, J.J. Higgins, and T.F. Clark. (1970). *Cultural and harvesting methods for kenaf*. USDA Prod. Res. Rpt. 113. Washington, DC.
6. Wilson, F.D., T.E. Summers, J.F. Joyner, D.W. Fishler, and C.C. Seale. (1965). 'Everglades 41' and 'Everglades 71', two new varieties of kenaf (*Hibiscus cannabinus* L.) for the fiber and seed. Florida Agr. Expt. Sta. Cir. S-168.
7. Webber III, C. L., & Bledsoe, R. E. (1993). Kenaf: Production, harvesting, processing, and products. *New Crops*, 416-421.
8. Alexopoulou, E., Christou, M., Mardikis, M., & Chatziathanassiou, A. (2000). Growth and yields of kenaf varieties in central Greece. *Industrial Crops and products*, *11*(2), 163-172.
9. Manzanares, M., Tenorio, J. L., & Ayerbe, L. (1997). Sowing time, cultivar, plant population and application of N fertilizer on Kenaf in Spain's central plateau. *Biomass and Bioenergy*, *12*(4), 263-271.
10. Rowell, R. M., Sanadi, A. R., Jacobson, R. E., & Caulfield, D. F. (1999). Kenaf properties, processing and products. *Properties of Kenaf/Polypropylene composites. Jackson MS (Ed.), Mississippi State University, Ag & Bio Engineering*, 381392.
11. *Agricultural Research and Development Institute, 2009.*
12. www.wikipedia.com
13. *Kenaf "Webster's Third New International Dictionary, Unabridged. Merriam-Webster, 2002.*
14. (www.google.com)
15. Agbor, G. A. et al., Biochemistry Department, Faculty of Science, University of YI
16. Yong Gyu Lee et al. (2007). *Journal of ethno pharmacology, 113*, 62- 71
17. Gabriel, A Agbor et al., *Pakistan Journal of Biological Sciences*, 1397- 1401(05)
18. Sundarrajan, T. et al., (2011). *International Journal of Pharma and Bio Sciences, 2*, No.1.
19. Shivali, N. Mahadevan, & Pradeep Kamboj. (2010). *Annals of Biological Research*, 174-84.
20. Agbor, A. G., & Odetola, A. A. (2000). Hematological studies of Parquetina nigrescens on haemorrhagic anaemic rats. *African journal of medicine and medical sciences*, *30*(1-2), 105-109.
21. Agbor, G. A., Oben, J. E., Brahim, B. O., & Ngogang, J. Y. (2004). Toxicity study of Hibiscus cannabinus. *Journal of the Cameroon Academy of Sciences*, *4*(1), 27-32.

