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PHARMACOLOGICAL ACTIVITIES OF *ICHNOCARPUS FRUTESCENS* (L) R BR. – A REVIEW

Umadevi[1], Mullaicharam[2]*

1. SASTRA University, Thanjavur, Tamilnadu, South India.
2. Oman Medical College, Pharmacy Department, Sultanate of Oman.

Keywords:

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For Correspondence:

Mullaicharam

Oman Medical College,

Pharmacy Department,

Sultanate of Oman

E-mail:

mullaicharam@yahoo.com

ABSTRACT

Ichnocarpus frutescens has been traditionally used in Indian System of medicine mainly for the treatment of asthma, bronchitis, cholera, cough dog bites, diabetes, dysentery, fever, jaundice, measles, night blindness, small pox, snake-bites, sore, syphilis, tumor and wound. Though scholars have done phytochemical, Antidiabetic, Antioxidant, Antitumor activities in this wonderful plant still there is a lot to explore. Many properties of this plant was not yet proved clinically and very limited reviews are available for this plant.So researchers has more opportunity to explore the properties of this plant quatitatively.Hence a review work has been carried out in this plant.

INTRODUCTION

Plants have been used in the treatment of various diseases from the time immemorial. The use of plant as source of medicine lies in the root history of mankind.

Many of thousands of plant species growing through out the world have medicinal and containing active constituents that have direct action on the body.

India is one of the 12 leading biodiversity centers with the presence of over 45,000 different plants. However out of these strong resources only about 8,000 plants are used in Ayurveda 800 in siddha, 700 in unani and 50 in modern medicines.

Undoubted the plant kingdom still holds many species of plant containing substances of medicinal value which have yet to be discovered. Large number of plant is being constantly screened for their possible antimicrobial activity.

Uses of *Ichnocarpus frutescens* in the Indian system of medicine:

Inchnocarpus frutescens happens to be a wonder plant where all the plant parts are effectively utilized for various medicinal properties. The enthomedicinal uses of this plant include its use as a laxative, demulcent, depurative,diaphoretic,diuretic and in the treatment of asthma, bronchitis, cholera, cough dog bites, diabetes, dysentery, fever, jaundice, measles, night blindness, small pox, snake-bites, sore, syphilis, tumor and wound (1). It is also used in the dental cares and in skin disease especially leprosy. Stem found use in treating redness of eyes. Leaves are used to cure Guinea worm disease and filariasis.

The roots play a vital role in the treatment of HIV infection. The crude extract of the leaves of this plant have been shown to reduce fever, headache, inflammation and plasma glucose in diabetes (2, 3).

Phytochemical studies of *Ichnocarpus frutescens* done so for:

Leaves of *Ichnocarpus frutescens* have been reported to contain flavonoids and phenolic acids and stems to contain triterpene glycosides (4,5). Phytochemical and bioactivity studies on Bangladesh medicinal plants (6-11) reveal the presence of antioxidant property. Chemical constituents such as ursolic acid, kaemopferol, trifolin and mannitol were isolated from leaves *Ichnocarpus frutescens* (12), Flowers of Ichnocarpus were found to contain flavonoids (13). A new triterpene glycoside was isolated from the stem of Ichnocarpus frutescenes (14).

Description of the plant:

Ichnocarpus frutescens (Apocynaceae) is a large evergreen climbing, much branched shrub and ascending up to an attitude of 4000 ft, is found almost throughout India, Srilanka, Thailand,

Malaysia, Indonesia, Philippines and Australia (15,16). The plant was indentified in the foot hills of Kodaikanal Kollimalai and certain parts of Trichy District, Srirangam, Thiruvanaikovil. In Tamil it is known as udarkudi, Palvalli, In English it is known as Black creeper.

Macroscopy of the plant:

Leaves: Simple opposite, elliptic oblong to broadly lanceolate, acute or acuminate main nerves 5-7 pairs.

Roots: They are either entire or irregularly curved pieces of rusty or purplish brown color. Fresh are some what turgid and when scratched or incised, exude an abundance of creamy white or light yellowish latex.

Stem: A large much branched, twining shrub; young branches firely fulvous, tmentose.

Flowers: Greenish, white, fragrant, numerous in axillary or terminal particles of cymose clusters.

Fruits: Straight slightly curved, cylindrical follicles usually tow, divarciate

Seeds: Black, coma white.

Authentication of the plant:

The plant material was authenticated by Joint Director, Botanical Survey of India, Southern Circle, Coimbatore.

C No. BS/SC/5/23/07-08/Tech-1405

Works done by others on this plant:

Insulin secretagogue effect of *Ichnocarpus frutescens* leaf extract in experimental: A dose dependent study. (17)

Ichnocarpus frutescens leaf methoanolic extract showed significant plasma glucose lowering effect. Oral administration of *Ichnocarpus frutescens* methanolic extract led to a significant blood glucose lowering effect in glucose fed hyperglycemic and diabetic rats. (54.5%). The results have suggested that methanolic extract and n.hexane fraction of Ichocarpus frutescens may provide new therapeutic avenues against diabetes.

Antitumor activity of poly phenolic extract of *Ichrocarpus frutescens* (18).

Poly phenolic extract (PPE) of leaves of *Ichnocarpus frutescens* was evaluated for antitumor activity in Vivo. Murine Ehrlich ascites carcinoma (EAC) model was used to assess PPE antitumor activity in VIVO.

Results of in vivo study showed a significant decrease in tumor volume viable tumor cell count and a significant increase of life span in the PPE treated group compared to untreated one. The life span of PPE treated animals increased by 53.41% PPE of *Ichnocarpus frutescens* possesses strong free radical scavenging activity and antitumor activity in vitro and in vivo.

Antioxidant and membrane stabilizing properties of *Ichrocasrpus frutescens* (19).

The antioxidant potential of the 70% methanolic extract of *Ichnocarpus frutescens* was assessed by the 1, 1-diphenyl- 2 – picrylhydrazyl (DPPH). The hydrogen peroxide, the nitric oxide, the reducing power and the lipid per oxidation inhibition (Thiobarbituric acid – reactive substances production) and the red blood cell (RBC) membrane stabilization assays. The extract showed significant antioxidant activities in all arrays in a dose dependent manner. The extracts displayed notable activities in reactive oxygen species (ROS). Scavenging which could be attributed to the high phenolic contents of this extract. More over I frutescens extract showed strong reducing power and an ability to suppress lipid peroxidation. Suppression of lipid peroxidation and nitric acid scavenging would be the probable mechanism of the stabilization of the RBC membrane. In the DPPH radical scavenging assay the IC value of the extract was found to be 23.75 ug/ml. The extract inhibited the nitric oxide radicals generated from sodium nitroprusside and the IC value was found to be 69.69ug/ml comparable to that of 86.83 ug/ml for the positive control ascorbic acid.

REFERENCES

1. Duke, Phytochemical and Ethobotanical Database Dr. DUKE'S Phytochemical and Ethnobotinoca Database, USA. 2008.
2. Lakshmi DKM, Venkata Rao.E., Venkata Rao. D., Indian Drugs 1985; 22 : 552 – 553
3. Patoeka. J. J. Appl. Biomed., 2003,1, 7 – 12.
4. Minocha PK, Tandon RN. Phytochemistry., 1980,19, 2053 – 2055.
5. Varma RK, Gupta MM, Singh. N. Indian J. Chem. Sect. B – Org. Chem. Including Med. Chem., 1988, 27, 283 – 284.
6. Rouf R, Uddin SJ, Shilpi JA, Rahman MT, Ferdous MM, Sarker SD, ARS Pharmaceutica., 2006, 47 , 81 – 89.
7. Uddin SJ, Shilpa JA, Rouf R, Ferdous MM, Nahar L, Sarker SD.Fitoterapia., 2007,78 , 107 – 111.
8. Uddin SJ, Nahar L, Shilpi JA, Shoeb M, Borkowski T, Gibbsons S, Middle Ton M, Byres M, Sarker SD. Phytotheraphy Res., 2007, 2 , 757 – 761.
9. Uddin SJ, Shilpi JA, Byres M, Middle Ton M, Shoeb M, Nahar L, Sarker SD. Nat. Prods. Res; 2007, 2 , 663 – 668.

10. Uddin SJ, Shilpi JA, Alam SMS, Alamgiri M, Rahman MT, Sarker SD. J, Ethnopharmacology., 2005, 101 : 139 – 143.
11. Datta BK, Nahar L, Rahman MM, Gray AL, Auzi AA, Sarker SD. J.Net.Met., 2007, 61, 391 – 396.
12. Khan, M.S.T, Javed, Kalim, Khan, M.Hussain. Journal of the Indian Chemical Society., 1997, 72 (1), 65 – 6.
13. Singh, Rana Pratap, Singh, Ramayan Prasad. Journal of the Indian Chemical Society., 1987, 64 (11), 715 – 16.
14. Minacha, P.K. Tandon R.N. Chem. Dept. Narain Coll. Shikohabad, India. Phytochemistry (Elsevier)., 1980, 19(9), 2053 – 5.
15. Ghajini A. Medicinal Plants of Bangladesh, The Asiatic Society of Bangladesh, Dhaka., 1998, PP. 1-7, 11- 13, 16 – 20, 31 – 32, 34 – 35, 39, 41, 260, 334 – 344.
16. Grin Database, USDA, ARS, National Genetic Resources Program, National Germ Plasm Resources Laboratory. Beltsville, Meryland, USA ,2008.
17. Subash – Babu, P. Ignacimuthu, S. Agastian, P. Division of Ethnopharmacology, Chemico – Biological Interactions., 2008, 172 (2), 159 – 171.
18. Kumarappan C.T., Subhash C. Mandal., Experimental Oncology., 2009, 2, 94 – 101.
19. Muntasir, M. Majumder, Ehsanul H, Mazumder, M. Asharful Alam, Raushanara Aktar, Mostafizur Rahman, Satyajit, D. Shankar, Jaurnal of Natural Remedies 2008; Vol. 8/2, 209 – 215.