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IXORA COCCINEA- A REVIEW

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ABSTRACT
Ixora coccinea Linn., (Rubiaceae) commonly known as jungle of geranium and red ixora, is an evergreen shrub found throughout India. Depending on the medical condition, the flowers, leaves, roots, and the stem are used to treat various ailments in the Indian traditional system of medicine, the Ayurveda, and also in various folk medicines. The fruits, when fully ripe, are used as a dietary source. Phytochemical studies indicate that the plant contains important phytochemicals such as lupeol, ursolic acid, oleanolic acid, sitosterol, rutin, lecocyanadin, anthocyanins, proanthocyanidins, glycosides of kaempferol and quercetin. Pharmacological studies suggest that the plant possesses antioxidative, antibacterial, gastroprotective, hepatoprotective, antidiarrhoeal, antinociceptive, antimutagenic, antineoplastic and chemopreventive effects, thus lending scientific support to the plant's ethnomedicinal uses. In the present review, efforts are made in addressing its ethnomedicinal uses, chemical constituents, and validated pharmacological observations.

KEYWORDS: *Ixora coccinea*; scarlet *ixora*; jungle of geranium; phytochemistry; pharmacology.

INTRODUCTION
India is one of the world's biodiversity hotspots and reports suggest that there are many lesser known plants that are of use both medicinally and as sources of diet. *Ixora coccinea* Linn., (Rubiaceae) commonly known as the flame of the woods, flame of the forest, jungle flame, burning love, scarlet ixora, jungle of Geranium, and red ixora, is one such evergreen shrub. The plant is supposed to be originally native to India and Sri Lanka, however, today it can be found growing in the tropical and subtropical climates of the world. The plants have also naturalized to Puerto Rico, Florida, and parts of Nigeria.

The genus name "*Ixora*" is supposed to be derived from the Sanskrit word "ikvana", after a Malaysian deity, or possibly from the name "Iswara", the other name of Lord Shiva to whom the flowers are offered during worship, while the species name "*coccinea*" means scarlet). All parts of the plant are documented to be of use in Ayurveda, the traditional Indian system of medicine, and also in the various folk systems of medicine in India and Sri Lanka. The plant bears red to crimson colored fruits of chickpea size and are also used as food especially by children in the villages and tribal areas in India.

Scientific classification Kingdom: Plantae Division: Angiosperms Class: Eudicots Subclass: Asterids Order: Gentianales Family: Rubiaceae Subfamily: Ixoroideae Tribe: Ixoreae
Genus: *Ixora*

Botanical Details
Ixora coccinea are found growing profusely in dry lands where the soil is slightly acidic. The plants are densely branched and normally grow up to a height of 3 m. The stems are grey in color and are about 3 to 4 cm in diameter at the base. The leaves are dark green in color and oblong in shape. The inflorescences are terminal, dense corymbs and contain about 15 to 50 flowers. Each individual flower is tubular with 4 or 5 calyx lobes. The wild varieties of plants produce flowers that are red or red-orange in color. However, plants with white, yellow, salmon, or pink flowers are also prevalent and are now cultivated and marketed in horticultural outlets. Dwarf varieties of these plants are also available and are extensively used in landscaping and as indoor plants. The fruits are fleshy, globose berries, green in color when raw and dark blood red or purplish-black when ripe. The fruits contain 2 seeds that are proportionately large when compared to the size of the fruit.

Ixora Coccinea

Phytochemistry

The wide spread use of different parts of genus Ixora in traditional system of medicines has resulted in the chemical analysis of different species. The phytochemical investigation revealed that most of the plant belonging to the Rubiaceae family had flavanoids present in them. Other classes of chemical compound present are tannin, saponins, aromatic oil and fatty acid.

Phytochemical studies have shown that the major compounds present in *I. Coccinea* are lupeol, oleic acid, linolic acid, ursolic acid, oleanolic acid, stearic acid and sitosterol. Flowers are reported to contain rutin, leucocyanadin glycoside, cyanadin-3-rutinoside and delphinidin monoglycoside. The root bark contains Octadecadienoic acid while the root oil has been shown to posses methyl ester of palmatic, oleic, stearic and linolic acid. Leaves are reported to contain ixoratannin A-2, epicatechin, procyanidin A2, cinnamotannin B-1 and the flavone-3-olrhamnoside namely kaempferol-7-o-α-1-rhamnoside, kaemferol-3-o-α-1- rhamnoside, quercetin-3-o-1-rhamnopyranoside and kaempferol-3,7-o-α-1-dirhamnoside.

Pharmacological Activity

Antimicrobial activity was performed on 50% ethanolic extract of *I. Coccinea.* The effective inhibitory concentration of extract for both bacteria and fungus was found to be 125µg/ml beyond which the inhibitory activity declined and organism started reviving from antimicrobial principle. The aqueous extract of the plant was also evaluated for anti-diarrheal potential against several experimental models of diarrhea in albino rats. The result obtained substantiated the anti-diarrheal effect of the aqueous extract.

Antitumor activity of *I. coccinea* flowers was studied in comparison to intraperitonial transplanted Daltons lymphoma and ehrlich ascites carcinoma tumors in mice and found that the flower extract showed considerable antitumor principle.

Antiasthamatic activity was investigated of hydro alcoholic extract of leaves of *I. coccinea* in an ovalbumin induced asthmatic rat. Results provided information that *I. coccinea* has antiasthamatic property.

The anti-inflammatory activity of methanolic leaf extract was also investigated and the result showed that anti-inflammatory activity of the plant is mediated via inhibition of nitric oxide production, phagocytic cell infiltration, antihistamine effect, scavenging of free radical membrane stabilizing activity and lipid peroxidation.

The antinociceptive potential of leaves of *Ixora coccinea*was studied and the results showed that the antinociceptive action was mediated centrally at supraspinal level via dopaminergic mechanism.

Hypoglycaemic and Hypolipidemic activity of the aqueous extract of leaves of *I.coccinea* and showed significant reduction in blood glucose level and serum lipid profile level.

Traditional uses

The genus Ixora is widely distributed in tropical and subtropical regions of Asia. The leaves, flowers, roots, stem and fruits are used for different purpose by ethnic groups of different region of Asia, Africa and Europe.

The leaves of *I.coccinea* were found to have anti-inflammatory, anti-diarrheal, antiasthmatic, antiulcer and antinociceptic activity. They are also used to pacify vitiated pitta, skin diseases, colic, flatulence, diarrhea, indigestion, ulcers, wounds, and used as antiseptic. The flowers were used for the treatment of cancer, leucorrhoea, dysentery, dysmenorrhoea, haemoptysis and Hypertension. The roots showed wound healing and anti microbial activity. It is also used as astringent and antiseptic against scabies and other skin diseases.

CONCLUSION

The present review describes the phytochemical screening of *Ixora coccinea* and their traditional uses for different medicinal purpose. The pharmacological activity is studied in the plant and the evaluation needs to be carried out on *Ixora* in order to use the plant in formulation for their practical and clinical applications, which can be used for the welfare of the mankind.

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