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HYPERICUM OBLONGIFOLIUM CHOISY: A PHARMACOGNOSTIC REVIEW

Arati Tamta* and Chandra Shekhar Tailor

School of Pharmaceutical Sciences, Shri Guru Ram Rai University, Dehradun - 248001, Uttarkhand, India.

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Correspondence to Author:

Ms. Arati Tamta

Research Scholar,
School of Pharmaceutical Sciences,
Shri Guru Ram Rai University,
Dehradun - 248001, Uttarkhand,
India.

E-mail: arati.tamta12@gmail.com

ABSTRACT: Many herbal remedies have been employed in various medical systems to treat and manage different diseases. Medicinal plants and their investigation of the phytoconstituents are much interested in today's research. Herbal medicine uses medicinal plants for the prevention and treatment of diseases: it ranges from traditional and popular medicines in every country to the use of standardized and titrated herbal extracts. Generally, cultural rootedness enduring and widespread use in a Traditional Medical System may indicate safety, but not efficacy of treatments, especially in herbal medicine where tradition is almost completely based on remedies containing active principles at very low and ultra-low concentrations or relying on magical-energetic principles. Here, this study aims to evaluate the Pharmacognostic parameters and identify the Phytoconstituents. *Hypericum oblongifolium* (family: Guttiferae) is well known in India and is one of the most versatile medicinal plants having a wide spectrum of biological activity. It is a highly useful and traditionally used medicinal herbaceous plant found in tropical and subtropical areas of the world. The genus *Hypericum* consists of about 400 species with widespread medicinal applications in various health disorders.

INTRODUCTION: There are a plethora of knowledge, information, and benefits of herbal drugs in our ancient Ayurvedic and Unani medicine. One of the earliest treatises of Indian medicine, the Charaka Samhita, mentions the use of over 2000 herbs for medicinal purposes¹. India has a rich heritage of knowledge on plant-based both for exploitation in preventive and curative medicine. The use of traditional plants to combat microbial diseases is becoming the focus of numerous studies².

The genus *Hypericum* consists of about 400 species with widespread medicinal applications in various health disorders. *Hypericum oblongifolium* Choisy is an erect evergreen shrub usually 6-12 m high, belonging to the family Hypericaceae, which comprises 8 genera and 210 species. 1) Antifungal, antibiotic, antiviral and anticancer compounds have been isolated from the genus. In China and in the Himalaya Hills, *H. oblongifolium* is common on Khasia Hill at an altitude of 5000-6000 m.

It has been used in traditional Chinese herbal medicine to treat hepatitis, bacterial diseases, nasal hemorrhage, and as a remedy for dog bites and the sting of bees³. Large proportions of world's population depend on traditional medicine because of scarcity, the high cost of orthodox medicine, and unpleasant side effects⁴. Ayurveda has emphasized

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food in the management of diseases. Even practitioner of the modern system has realized the significance of dietary items, in the form of Nutraceuticals elements, in the treatment of chronic diseases⁵. *Hypericum oblongifolium* (family:- Guttiferae) is well known in India and is one of the most versatile medicinal plants having a wide spectrum of biological activity. *Hypericum oblongifolium* comprises 50 genera and 1200 species⁶. Herb is a good appetizer; remove Kapha, Vata and piles; astringents cure dysentery and diarrhoeas, skin diseases, and quarten fevers. The leave are anti-inflammatory, refrigerant, hepatitis, gastric ulcers, antispasmodic and antiseptic⁷. The present review emphasizes with medicinal importance of the *Hypericum oblongifolium* with referene to its Pharmacognosy, Phytochemistry, and Pharmacological activities.

Taxonomic Classification:

Kingdom: Plantae

Division: Tracheophytes

Class: Rosids

Order: Malpighiales

Family: Guttiferae

Sub-Family: Hypericaceae

Genus: *Hypericum*

Species: *Hypericum oblongifolium*

Vernacular Name:

English: St.Johnswort,

Hindi: Chava, chaya, chitroi, Basant,

Kahmiri: Pingniara

Distribution: A number of *Hypericum* species were used by Amerindian tribes. *Hypericum oblongifolium* Fig. 1 is a member of the genus *Hypericum*, of which there are 400 species worldwide^{8, 9}. It is a 6-12m high erect evergreen shrub that grows at an altitude of 5000-6000 ft. and is common present from northern Pakistan, east to central Nepal through the Western Himalaya¹⁰. It is widely distributed in roadside, disturbed sites,

dirt roads, the sides of roads and highways, and sparse woods¹¹.

MORPHOLOGY: *Hypericum oblongifolium* is herbs, shrubs, or small trees, or the plant is a glabrous perennial, erect and usually woody at the base. Plants from this genus are annual or perennial shrubs or small trees that possess pale to dark yellow flowers. The top portion of the plants is glabrous or pubescent with simple hairs^{12, 13}.



FIG. 1: NATURAL HABITAT *HYPERICUM OBLONGIFOLIUM* CHOISY

Leaves: The leaves are ovate to linear, sessile, opposite, and contain translucent glandular dots.

Flowers: The flower has five short, subequal, entire, imbricate, basally connate sepals and five persistently withering yellow petals. The ovary is superior, capsular, and three-styled, whereas the stamens are many, arranged in bundles of threes. The flowers are profuse, arranged in branched cymes which bloom from June until September¹⁴.

Seeds: The seeds are dark reddish-brown and are 1-1.2 millimeters long.

Phytochemistry: Different types of phytochemical components have been isolated in previous studies from this medicinal herb such as Phytochemical analysis showed that *Hypericum oblongifolium* contained flavonoids, saponins tannins¹⁵. The plant contains a wide spectrum of substances, among which anthroglycosides, flavonoids, and phloroglucin derivatives have roles in the principle pharmacological effects¹⁶. Recently, various chemical compounds have been isolated from this plant and include triterpenes like hyperinols A and B¹⁷, flavonoids like quercetin, myricetin,

rhamnetin, kaempferol, luteolin¹⁸, 18- β -H-urs-20(30)-en-3 β -ol-28-oic acid, tetracosyl 3-(3,4-dihydroxyphenyl) acrylate, shikimic acid, 1-octatriacontanol, hexacosyltetracosanoate, β -sitosterol and β -sitosterol 3-O- β -D-glucopyranoside¹⁹, xanthenes like hypericorin-C, hypericorin-D, 3,4-dihydroxy-5-methoxyxanthone, along with 2,3-dimethoxyxanthone, 3, 4 - dihydroxy - 2 - methoxyxanthone, 3, 5 - dihydroxy - 1 - methoxyxanthone, 3-acetylbetulinic acid, 10-H-1,3-dioxolo [4, 5 - b]- xanthen - 10 - one, 3 - hydroxyl - 2 - methoxyxanthone, 3,4,5-trihydroxyxanthone and betulinic acid²⁰. Our research group recently reported a new antioxidant that is folicitin from *Hypericum oblongifolium*²¹.

Pharmacological Activities of *Hypericum oblongifolium*: *Hypericum oblongifolium* showed various pharmacological activities are as follows:

Anti-oxidant Activity: Phytochemical investigations on *Hypericum oblongifolium* led to the isolation of a flavone named folicitin (1) and a bicyclic conjugated lactone, folenolide (2) from the ethyl acetate fraction of methanolic extract. Both metabolites were characterized as new compounds based on detailed spectroscopic analyses. *The DPPH radical scavenging assay evaluated both compounds' in-vitro anti-oxidant potential.* Compound 1 exhibited significant antioxidant activity while compound (2) was found inactive²².

Anti-inflammatory and Antipyretic Activities: The present therapeutic agents for treating pain, inflammation, and pyrexia are not very effective and are accompanied by various side effects. *In-vivo* acetic acid-induced writhing and hot plate tests were used for antinociceptive effects at 100, 200, and 300 mg/kg i.p. Methanol extract's anti-inflammatory and antipyretic potential were tested in carrageenan-induced paw edema in mice and yeast-induced hyperthermia respectively²³.

Analgesic Activity: The present study is aimed to determine the antinociceptive activity of crude methanol extract of *Hypericum oblongifolium*. *In vivo* acetic acid-induced writhing test was used for antinociceptive effects in mice at intraperitoneally and 10, 20 and 30 mg/ kg body weight. The methanol extract of the medicinal plant *Hypericum oblongifolium* showed significant analgesic /

antinociceptive effects in animal models and thus supports the traditional uses of the plant in painful conditions²⁴.

Anti-proliferative Activity: The anti-proliferative activity of hexane (F1), ethyl acetate (F2), butanol (F3) and water (F4) extracts of *Hypericum oblongifolium* were tested in vitro for their anti-proliferative (anticancer) activity on the cell lines: HT-29 human colon adenocarcinoma, NCI-H460 human non-small cell lung carcinoma, MCF-7 human breast cancer, OVCAR-3 human ovarian adenocarcinoma, and RXF-393 human renal cell carcinoma with etoposide as a positive control²⁵.

Wound Healing: The wound-healing effect of *H.ypericum perforatum* extract was compared with dexpanthenol and titrated extract of *Centella asiatica* (TECA) on cultured chicken embryonic fibroblasts. Chicken embryonic fibroblasts from fertilized eggs were incubated with the plant extract, dexpanthenol, and TECA. The wound-healing activity of *H. perforatum* extract seems to be mainly due to the increase in the stimulation of fibroblast collagen production and the activation of fibroblast cells in polygonal shape, which plays a role in wound repair by closing damaged areas. The findings demonstrated the wound-healing activity of *Hypericum perforatum*, which has previously been based on ethnomedical data.

Anti-ulcer: Three new xanthenes, hypericorin C (1), hypericorin D (2) and 3,4-dihydroxy-5-methoxyxanthone (3), along with eight known compounds; 2,3-dimethoxyxanthone (4), 3,4-dihydroxy-2- methoxyxanthone (5), 3,5-dihydroxy-1-methoxyxanthone (6), 3-acetylbetulinic acid (7), 10H-1,3- dioxolo [4,5-b]xanthen-10-one (8), 3-hydroxy-2-methoxyxanthone (9), 3,4,5-trihydroxyxanthone (10) and betulinic acid (11) were isolated from the roots of *Hypericum oblongifolium*. The structures of the new compounds 1, 2 and 3 were deduced by spectroscopic techniques [ESI MS, 1 H NMR, 13C NMR and 2D NMR (HMQC, HMBC, COSY, and NOESY)]. The entire series of compounds were evaluated for anti-ulcer activity²⁶.

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CONFLICTS OF INTEREST: No

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