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## HYPERICUM OBLONGIFOLIUM A REVIEW

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### Keywords:

*Hypericum oblongifolium*,  
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**ABSTRACT:** Since ancient times, *Hypericum* species have been used in traditional therapy to treat various complaints. The plant has an important role in medicine and public health. *Hypericum oblongifolium* is a shrub and is mostly found in hilly areas, commonly called abhedha and peoli. Literature review for various articles and journals of traditional Indian medicine revealed that *H. oblongifolium* has a lot of medicinal properties. Leaves, flowers and stems have been reported for medicinal activity. It is traditionally determined that they had been reported for treating respiratory disease, gastric ulcer, snake bite, wound, boils, etc. The plant has also been reported for various pharmacological aspects as anti-oxidant, anti-inflammatory, anti-pyretic activity, etc. However, limited research has been performed on this plant for exploring these traditional uses. The present review explores its biological description, distribution, chemical constituents, pharmacological and traditional activities of *H. oblongifolium*.

**INTRODUCTION:** Traditionally, medicinal plants are determined as a good source of different active constituents. Due to the diverse pharmacological aspects, from 2, 25,000 plant species, only 10% (less than) of the plant had been studied<sup>1</sup>. For the treatment of various disease conditions, diverse species of medicinal plants were used due to the presence of the active chemical. Prolong use of the herbal plant as medicine determine the effectiveness and its value in the future<sup>2</sup>. Various herbal products are used as medicine due to the significant effect on patient health, as it depends upon its popularity and availability<sup>3</sup>.

For the majority of the world's population, the plant is an important source of the drug. In many developing countries, even today, the plant materials' therapeutic remedies continue to play a major role in primary health care<sup>4</sup>. Because of the widespread interest in medicinal plants, the present review on *Hypericum oblongifolium* provides up-to-date information in references to botanical descriptions, ethnomedicinal uses, phytochemistry, and pharmacological studies that appear in the literature.

*Hypericum*, a large genus of herbs and shrubs, grows widely in temperate regions throughout the globe. These plants are the richest source of flavones and xanthenes<sup>5</sup>. The genus *Hypericum* consists of nearly 500 species, occurs throughout the world, and is well represented in the Mediterranean and the North East areas<sup>6</sup>. The genus *Hypericum* has been receiving attention as a medicinal plant because a number of species are

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effective in the treatment of burns and gastrointestinal diseases. AS per many researchers this plant has been investigated for antibacterial, antifungal, and antioxidant activities. One of the well known *Hypericum* species is *Hypericum perforatum* L., (St. John's wort), in which various studies had been performed by the researcher determining that the

*H. perforatum* L. activities, this species has antidepressant, antianxiety, antiviral, wound healing, and antimicrobial activities<sup>7</sup>. *Hypericum oblongifolium* belonging to the family Hypericaceae<sup>8</sup> is commonly known as Pendant St. John's wort (English)<sup>9</sup>, Chaya, Chava, Chitroi (Hindi)<sup>10</sup>, Peoli, Peniuli (Kashmiri)<sup>11</sup>, Abhedha (Kumaun). Its synonyms include *Hypericum aitchisonii* Drummond & Keller, *Hypericum cernuum* Roxb., *Hypericum cernuum* Roxb. ex D. Don, *Hypericum patulum* var. *oblongifolium* (Choisy) Koehne, *Hypericum speciosum* Wall., *Norysca cernua* (Roxb.) Voigt, *Norysca oblongifolia* Blume<sup>12</sup>.

It is distributed in the genus *Hypericum* (Hypericaceae) consists of nearly 500 species is of medicinal plants,<sup>17</sup> species distributed in the Himalayas region. In India, Jammu & Kashmir (Batote, Amarnath, Pahalgam), Himachal Pradesh (Mcleodganj, Dharamshala), Punjab, Uttarakhand (Pangot- Binsar, Nainital- Bhimtal, Bhageshwar, Chaubatia, Chakrata), Uttar Pradesh at an altitude of 1500 to 2000 m. It is also grown in countries like Pakistan, Afghanistan, and Nepal at 800-2100 m<sup>13</sup>. Different parts of this plant have been used, including roots, leaves, stems, flowers, and twigs, which have been reported to possess various biological activities.

**Morphology:** It is a shrub about 1-2 m tall. Stem suberect, procumbent or ascending, sometimes arching, stout, reddish-brown to grayish brown, four-lined when young, soon becoming terete, glabrous. Leaves simple, opposite, decussate, ovate-oblong to elliptic-lanceolate, about 2-10 × 0.8-4 cm across, base cuneate to acute, margins entire, apex subacute to obtuse, leaf lamina contain pellucid punctate glands on both sides, green glabrous above and paler glaucous beneath, midrib impressed above and prominent beneath, lateral veins about 2-6 on either side of the midrib, usually

first two near the base more prominent, veinlets densely reticulate, petiole sessile, exstipulate. Inflorescence 1-6 flowered, terminal 1-5 cymose. Flowers bisexual, actinomorphic, about 2.5-8 cm across; pedicel about 1-3.5 cm long; bracts lanceolate, auriculate; margins glandular ciliate, punctate with black glands; apex acute to acuminate, about 1-9 mm long, caduceous; sepals 5, unequal, lanceolate-ovate to elliptic, chartaceous, glandular punctate with black glands, persistent, about 5-10 × 2-4 mm across; petals 5, oblanceolate-obovate, yellow or bright yellow, veined prominently, persistent, apex obtuse or apiculate, about 20-30 × 10-13 mm across. Stamens 30-40 each in bundles or fascicles of 5, free, antiseptals, filaments linear, filiform, glabrous, about 15 mm long; anthers dorsifixed, yellow or reddish, connectives with usually black amber gland. Ovary superior, globose, 5 locular, syncarpous, about 5-8 mm long, ovules many, axil placentation, styles 3, free from the base, erect, about 9-12 mm long; stigma 3, capitate.

Fruit capsule septicidal, ovoid- ellipsoid, about 10-15 mm long, apex obtuse, without vittate. Seeds numerous, oblong, about 1-1.2 mm long, acute to apiculate on the ends, testa reticulate-scalariform or linear foveolate, brown; embryo slender, erect. Seeds may be dispersed by autochory, *i.e.*, self dispersal, anemochory

*i.e.*, wind dispersal, zoochory, *i.e.*, dispersal by birds or animals, anthropochory, *i.e.*, dispersal by humans. *Hypericum* species flowers are complete, bisexual, *i.e.*, with functional male (androecium) and female (gynoecium), including stamens, carpels, and ovary. Pollination is entomophilous, *i.e.*, by insects, or cleistogamy, *i.e.*, by self or allogamy, *i.e.*, by cross-pollination. Flowering/Fruiting: March-August/May-June<sup>10, 11</sup>. The specific name *oblongifolium* refers to oblong-shaped leaves<sup>16</sup>.

#### **Ethnomedicinal Uses:**

**Treatment of Hepatitis:** Nasal hemorrhage, gastric ulcer, external wounds, sedative, antispasmodic, antiseptic, and as a remedy for sting of bees and dog bites<sup>17</sup>, bacterial diseases and in asthma<sup>18</sup>. Its leaves are used to treat wounds and boil<sup>19</sup>; leaf juice is used against snakebite<sup>20</sup>.

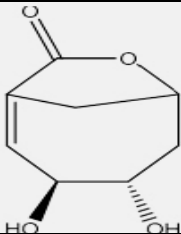
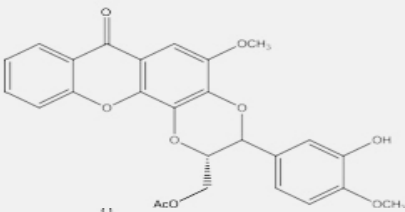
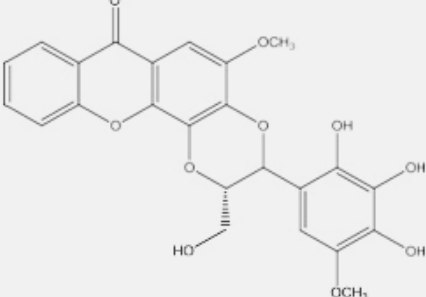
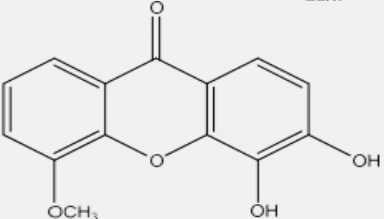
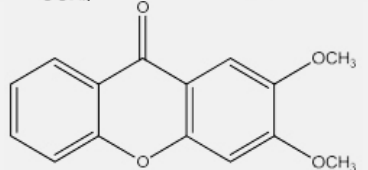
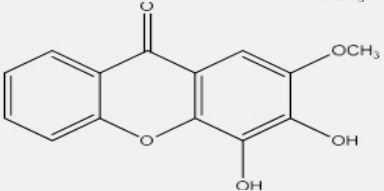
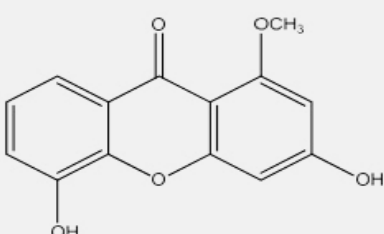
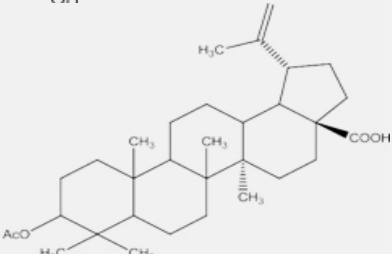
Leaves and stems are commonly used for normal vaginal delivery<sup>21</sup>.

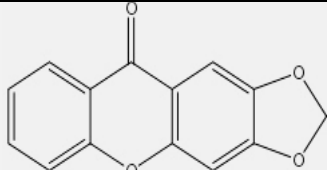
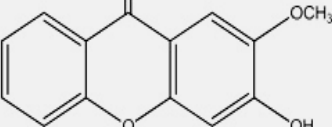
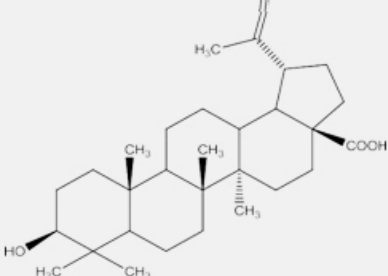
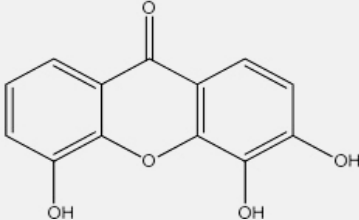
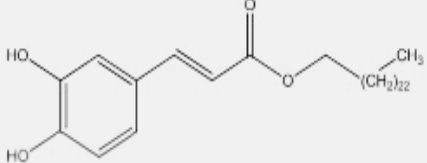
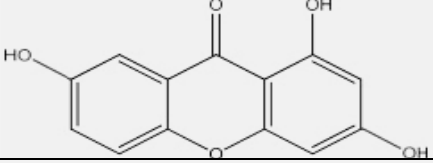
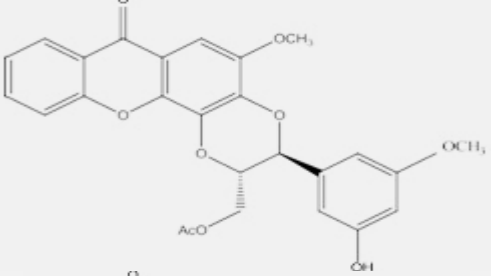
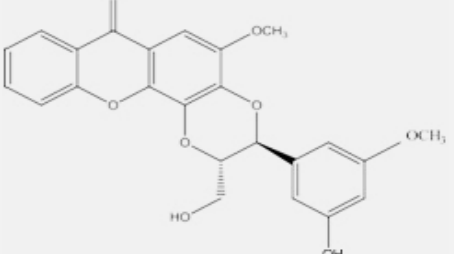
**Phytochemistry:** The genus *Hypericum* has the following reported compounds as hypericin<sup>22</sup>, naphthodianthrones, pseudo hypericin's, proto hypericin, proto-pseudo hypericin<sup>23</sup>, phenol, rutin,

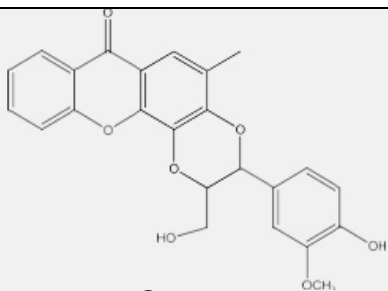
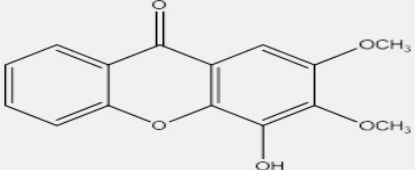
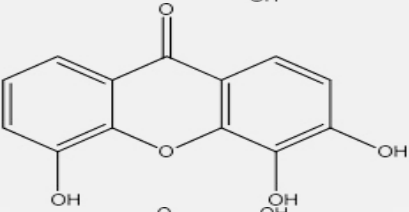
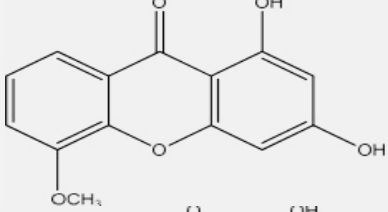
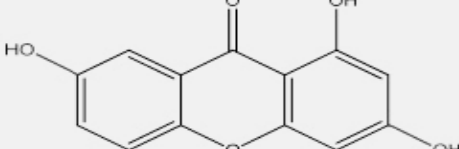
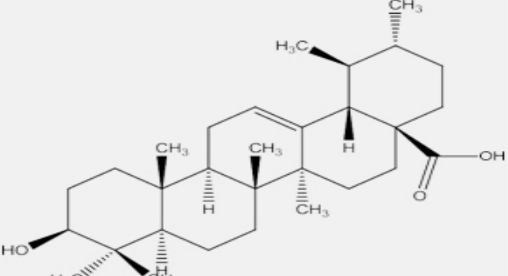
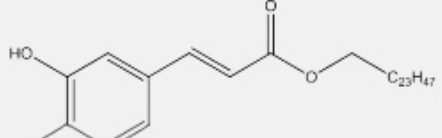
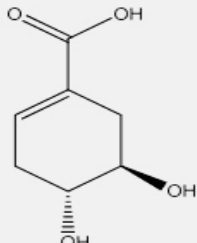
quercetin<sup>24</sup>, hyperforin, adhyperforin, flavonoids (hyperoside), flavonoids, saponins, tannins<sup>25</sup> and phloroglucinols<sup>26</sup> essential oil is also reported<sup>27</sup>. *Hypericum oblongifolium* consists of the following major chemical constituents as Triterpenes (Hyperinols A and Hyperinols B)<sup>28</sup> others are:

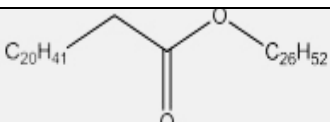
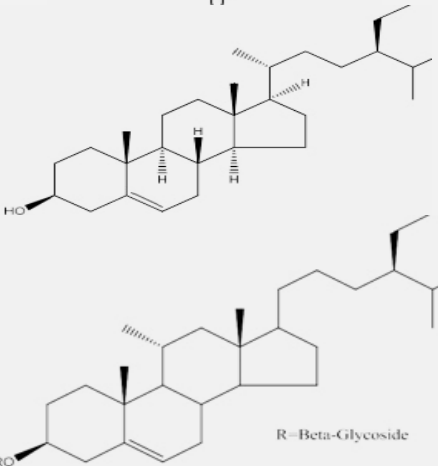
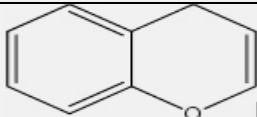
**TABLE 1: CHEMICAL CONSTITUENTS OF H.OBLONGIFOLIUM**<sup>26, 29, 33</sup>

S. no	Constituents	Structure
1.	<b>Flavanoids</b>	
a)	Quercetin	
b)	Myricetin	
c)	Rhamnetin	
d)	Kaempferol	
e)	Luteolin	
f)	Isorhamnetin	
g)	Folicitin	

h)	Folenolide	
<b>2. Xanthenes</b>		
a)	Hypericorin C	
b)	Hypericorin D	
c)	3,4-dihydroxy-5- methoxyxanthone	
d)	2,3-dimethoxyxanthone	
e)	3,4-dihydroxy-2- methoxyxanthone	
f)	3,5-dihydroxy-1- methoxyxanthone	
g)	3-acetylbetuline acid	

h)	10-H-1,3-dioxolo [4,5-b]xanthen- 10-one	
i)	3-hydroxy-2-methoxyxanthone	
j)	Betulinic acid	
k)	3,4,5-trihydroxy xanthone	
l)	Tetracosyl 3-(3,4- dihydroxyphenyl) acrylate	
m)	1,3,7-Trihydroxy xanthone	
<b>3. Xanthonolignoid</b>		
a)	Hypericorin A	
b)	Hypericorin B	

c)	Kielcorin	
d)	4-hydroxy-2,3- dimethoxyxanthone	
e)	3,4,5- trihydroxyxanthone	
f)	1,3-dihydroxy-5- methoxyxanthone	
g)	1,3,7-trihydroxyxanthone	
<b>4. Miscellaneous compounds</b>		
a)	18-β-H-urs-20 (30)-en-3 β-ol-28- oic acid	
b)	Tetracosyl 3-(3,4- dihydroxyphenyl) acrylate	
c)	Shikimic acid	
d)	1-octatriacontanol	

e)	Hexacosyltetracosanoate	
f)	$\beta$ -sitosterol	
g)	$\beta$ -sitosterol 3-O- $\beta$ -D- glucopyranoside	
h)	Benzopyrans	

**Pharmacological Aspects:** *Hypericum oblongifolium* possesses a number of medicinally important activities such as an antidepressant, anti-anxiety, antiviral, wound healing, antimicrobial, and antioxidant.

**Antioxidant:** Free radicals are produced due to oxidation inside the body which can be harmful to cells and can cause the death of cells leading to various human health disorders such as atherosclerosis, cardiovascular and neurodegenerative diseases. This oxidation can be stopped or reduced by various scavenging methods of antioxidants. *Hypericum* species contain various pharmacologically active compounds such as flavonoids, naphthodianthrones, phloroglucinols, and xanthenes whereas *H. oblongifolium* consists phenols, triterpenes, flavonoids, xanthenes, and its ligand are the most common class of plant phytochemicals presenting a wide range of biochemical properties, including Further due to the presence of xanthenes which were isolated from the roots of the *H. oblongifolium* were helpful in anti-tumor, anti-fungal, cytotoxic, antimicrobial, anti-ulcer, anti-depressant, inhibition of lipid peroxidase, anti-inflammatory<sup>32</sup>, antiseptic, anxiolytic, diuretic, digestive, expectorant and vermifugal activities<sup>30</sup>. The crude extract of *H. oblongifolium* has been found to possess respiratory, gastrointestinal, and cardiovascular inhibitory effects<sup>25</sup>. The aqueous and n-butanol

fractions of *H. oblongifolium* possess significant in-vitro antiglycation, antioxidant, and anti-lipid peroxidation activities with no toxic effects<sup>33</sup>. *H. oblongifolium* hexane fraction was reported to possess relatively potent anti-proliferative activity<sup>34</sup> and anti-ulcer activity<sup>26</sup>.

**Urease Inhibition:** Various prepared fraction of extracts and isolated compounds from the twigs of *Hypericum oblongifolium* was evaluated for the urease inhibitory activities. As it was determined that urea is hydrolysis to ammonia and CO<sub>2</sub>, urease act as catalysts and clinically possesses various pathogenic factors. Therefore, the urease inhibitors were determined as potent anti-ulcer drugs. Further, studies on the diverse function of this enzyme and its inhibition were determined by the urease-producing bacteria<sup>31</sup>.

**Analgesic, anti-inflammatory, and anti-pyretic activities:** *Hypericum oblongifolium* was studied and determined strong *in vitro* anti-inflammatory<sup>32</sup> and anti-ulcer<sup>30</sup> activities by inhibiting the respiratory burst of neutrophils and urease due to the presence of xanthenes. Presences of the most abundant flavonoid consist luteolin, myricetin, quercetin, rhamnetin, and kaempferol in *H. Oblongifolium*<sup>29</sup> shows analgesic, anti-inflammatory, and anti-pyretic activities<sup>17</sup>. *H. oblongifolium* was further studied and showed the presence of folicitin, which consists of strong



antioxidants, including folicitin<sup>26</sup> and isolates the quercetin, which also determined the antioxidant activity; therefore, the antioxidant can reduce pain, pyrexia, and inflammation. Another methanolic extract of *H. oblongifolium* was evaluated for its anti-nociceptive, anti-inflammatory, and anti-pyretic activity<sup>17</sup>.

**Chymotrypsin Inhibitory Activity:** *Hypericum oblongifolium* was reported to determine the strong chymotrypsin inhibitory activity as chymotrypsin which has been investigated as bioactive constituents of this species, show ethano pharmacology and chemotaxonomic importance for the determination of chymotrypsin by brine shrimp lethality test was performed, which showed strong cytotoxicity whereas the pharmacological screening shows the strong inhibitory activity against chymotrypsin enzyme. Further studies show significant chymotrypsin inhibitory activity, resulting in the isolation and structure elucidation of new taraxastane type triterpenes; Hyperinols A and Hyperinols B have potent chymotrypsin inhibitory action<sup>28</sup>.

**Antispasmodic, Bronchodilator, Blood Pressure Lowering:** Flavonoid has the properties to show Ca<sup>++</sup> antagonist effect. Antispasmodic, hypotensive, bronchodilator, vasodilator effects, cardiac inhibitory mediated as it was studied that the stem and leaves the part of *Hypericum oblongifolium* possesses these effects through Ca<sup>++</sup> antagonism. Therefore, the phytochemical studies determine the Ca<sup>++</sup> channel blocking activity due to the presence of flavonoids within it<sup>25</sup>.

**CONCLUSION:** *H. oblongifolium* is a shrub used as a medicinal plant in the traditional medicine system. Several primary and secondary metabolites have been isolated from leaves, flowers, and stems. Many of these secondary metabolites have also been found to be helpful in various pharmacological action and traditional uses and found to be helpful in treating various diseases conditions.

In addition, the various plant extract has been reported to exhibit various pharmacological activities, which include in-vitro antioxidant activity, antimicrobial activity. The chemical constituent and their pharmacological activity

report in this review determine the therapeutic efficacy of the *H. oblongifolium*. Thus, the entire investigation and wide traditional uses in this plant will cure various disease conditions and play an important role in new drug discovery and synthesis.

**ACKNOWLEDGEMENT:** Nil

**CONFLICTS OF INTEREST:** Nil

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