



A REVIEW OF COMPREHENSIVE STUDY ON HIBISCUS ROSA SINENSIS

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Abstract

This study includes the results of both animal studies and clinical trials to evaluate the efficacy of hibiscus for treating metabolic syndrome, which includes hyperglycemia, hypertriglyceridemia, low high-density lipoprotein, obesity, and hypertension. Although hibiscus has the potential to improve metabolic syndrome biomarkers, there are still some issues that require further research. These issues include the need for more and larger human clinical trials, for human trials to include a wider range of ethnic groups, for human trials to consider the participants' physical activity and health, and for research on the effects of growing conditions and extraction/preparation methods on nutrient content in hibiscus. The hibiscus plant *Rosa sinensis* has a wide range of medicinal and pharmacological uses. Aphrodisia, laxative, oral contraceptive, menorrhagic, antioxidant, etc. are only a few of its many pharmacological attributes. This herb also has anti-fertility qualities. The current study's goals are to confirm the anti-inflammatory, antioxidant properties. A variety of problems have been treated using *H. Rosa sinensis*. This article concentrates on some of the pharmacological properties of a plant that is often used for natural medicines.

Keywords: Malvaceae, Lipid metabolism (anti-cholesterol), Renal/diuretic effect, Anti-diabetic, Anti-oxidant.

Introduction:

In several tropical nations, this plant is used for a number of significant medical purposes, including the treatment of stomach ulcers, alopecia and infections caused by bacteria and fungus, diabetes, inflammation, fever, and coughing. The primary bioactive mixtures responsible for its therapeutic benefits, according to phytochemical study, include videlicet flavonoids, tannins, terpenoids, saponins, and alkaloids. Recent research have demonstrated that several types of extracts from the *H. rosa-sinensis* corridor have a wide range of beneficial properties, such as cancer, diabetes, crack-mending, and abortifacient activity. Hibiscus leaves are ovate, simple and 8 to 10.5 cm long. They are spirally arranged around a long stalk. Hibiscus *Rosa sinensis* (shoe flower) is a perennial shrub belonging to family Malvaceae and genus hibiscus. The genus hibiscus contain about 275 species, which are native to tropical and south Asia and are widely distributed in different

region of world. Many hibiscus species are mostly cultivated as ornamental plant. They produce vibrantly coloured snowy flower (single or double) in shades of red, peach, white, pink and orange are available. Flower morphology suggests to pollination through sunbirds and hummingbird which are attracted towards nectar producing flowers.

Hibiscus Rosa sinensis is known by different name depending where are in world. It is known as Bent EL-kunsil (Arabic), Rosa Della Cina (Italian), Aka-bana (Japanese), Sho flower (English), Japa (Sanskrit), Jasum (Hindi, Punjabi), Hibiscus de China (China), Joba (Bengali), Java (telegu), Chinesischer Roseneibish (German), Clavel japons (Spanish), Hibiscus (Swedish) and Gudhal (Urdu). For the sustained release matrix tablets, hibiscus rosa sinensis leaves mucilage is used due to its good swelling, good flow rate and suitability for matrix formulation. This mucilage is used as a binder in various pharmaceutical tablets. In hindi Hibiscus rosa sinensis is known as Gurhal. The common name of hibiscus sinensis is tropical hibiscus, Chinese Hibiscus Rosa sinensis are tropical hibiscus, Chinese hibiscus. It belongs to the Malvaceae family. This glabrous shrub and widely cultivated in tropics. In India it is perennial ornamental shrub which is available easily. The height of the plant is between 7 to 12 feet and spread from 6 to 10 feet. The leaves are alternated, ovate to lanceolate, often with a toothed or lobed margin (dentate). The flowers are large, conspicuous, trumpet-shaped with five or more petals, colours from white to pink, red from 4-8 cm broad.

There are so many pharmacological and pharmaceutical importance of hibiscus Rosa sinensis. It shows various pharmacological activities such as aphrodisia, laxative, oral contraceptive, menorrhagic, antioxidant etc. This plant also possesses anti-fertility activity. The mucilage isolated from the leaves of hibiscus Rosa sinensis was homogeneous on electrophoresis. It contains acidic polysaccharides and showed considerable anti complementary activity. Flower colour in certain species such as H.mutabilis and H.tiliaceus, changed with age. The fruit is a dry five lobed capsule, containing several seeds in each lobe which are released when the capsule dehisces at maturity.

Plant Profile:

- Synonym : Abelsonia Cruentus, Walp
- Kingdom : Plantae (plants)
- Sub Kingdom : spermatophyta (vascular plant)
- Super Division : Embryophyta
- Division : magnoliophyta (flowering plant)
- Class : Magnoliopsida (Dicotyledons)
- Sub Class : Dilleniidae
- Super Order : Rosanae
- Order : Malvales
- Family : Malvaceae (mallow family)
- Sub Family : Malvoidea
- Genus : Hibiscus L.-Rose mallow
- Species : Hibiscus rosa sinensis L. shoe black plant



Fig. 1 Hibiscus Rosa sinensis

Characteristics of hibiscus:

Flower:

- I. The hibiscus flower is showy and conspicuous.
- II. It is usually borne singly but sometimes can be seen in clusters.
- III. The flowers are trumpet shaped and range in colours of red, orange, yellow, pink or purple.
- IV. There are five or more petals in a Hibiscus flower.

Leaf:

- I. The leaves are ovate to lanceolate and are borne alternately.
- II. The leaf margin is often lobed or toothed.
- III. It may be smooth or covered in trichomes.
- IV. The fresh leaves contain 2-3 % proteins and traces of iron, calcium and phosphorous.

Habitat:

- I. The genus thrives in warm, temperate tropical and subtropical regions throughout the world.
- II. The plant follows a perennial or annual life cycle.
- III. It is entomophilous i.e. pollinated by insects.

Mechanism of Action:

Hibiscus Rosa sinensis mediates anxiolytic effect via modulation of ionotropic GABA-A receptors. As an antihyperglycemic, Hibiscus Rosa sinensis serves as anti-insulin resistance by inhibition of the phosphorylation of IRS-1 beside a similar effect to gliptins.

Chemical constituent:

Leaves and stems contain β -sitosterol, stigmasterol, taraxeryl acetate and three cyclopropane compounds and their derivatives. Flowers contain cyanidin diglucoside, flavonoids and Vitamins, thiamine, riboflavin, niacin and ascorbic acid (Ghani, 2003). Quercetin-3-diglucoside, 3,7-diglucoside, cyanidin-3,5-diglucoside and cyanidin-3-sophoroside-5-glucoside have been isolated from deep yellow flowers; all above compounds and kaempferol-3-xylosylglucoside have been isolated from ovary white flowers (Rastogi & Mehrotra, 1993).

Traditional Uses:

H. Rosa-sinensis has been used in Siddha and traditional Tamil system from South India, from numerous centuries. Hibiscus excerpts have been used for periods in Ayurveda to cure numerous affections. The shops have the natural health benefit that can be used to cure conditions naturally. They're used to cure affections similar as cough deep freeze, hair loss and hair greying also. The flowers and leaves of this factory play a major part in hair treatment. These are base into a fine paste with water and this is generally used as a soap plus conditioner. The factory also helps to ameliorate the overall texture and health of hair. Hibiscus is a sweet sour condiment and is used in the medication of herbal teas. It acts as an antioxidant and also helps in the reduction of cholesterol situations. [6] It has also been used in the traditional drug for treating snap, loss of appetite, diseases of the respiratory tract. The factory is salutary as a mild laxative, expectorant and diuretic. The Hibiscus rosa-sinensis has been plant to have emmenagogue goods which can stimulate period and in some women, beget a revocation.

Pharmacological effect:

Sr. no.	Pharmacological use	Part used	Extract/fraction
1	Anti-bacterial	➤ Leaves ➤ Flower ➤ Roots	Methanolic Aqueous Hexane Methanolic Aqueous Ethyl alcohol
2	Anti-fungal	➤ Leaves ➤ Flower ➤ Roots	Methanolic Ethyl alcohol 50% ethanol Ethyl alcohol
3	Anti-oxidant	➤ Leaves ➤ Flower ➤ Steam	Aqueous 70% ethanol 95% ethanol 80% methanol 80% ethanol Aqueous Aqueous Methanolic

4	Anti-diabetics	➤ Leaves ➤ Flower	Alcoholic Methanolic Ethanolic Ethanolic
5	Anti-fertility	➤ Flower ➤ Power	Methanolic Aqueous Propylene glycol
6	Hair growth promoting activity	➤ Leaf ➤ Flower	Petroleum ether Ethanolic 5% hydrochloric Aqueous
7	Neuroprotective	➤ Root	Methanolic Ethanolic
8	Wound healing activity	➤ Flower ➤ Leaves	Ethanolic Aqueous Ethanolic
9	Anti-inflammetory	➤ Leaves ➤ Flower	Hydroalcoholic Ethanol
10	Immune response	➤ Flower	Aqueous Ethyl acetate
11	Cardioprotective	➤ Leaves ➤ Flower	Aqueous
12	Anti-pyritic	➤ Root ➤ Leaves	Aqueous Aqueous
13	Anti-hyperlipidemic	➤ Flower	Ethanolic
14	Hepatoprotective	➤ Leaves	Ethanolic
15	Gastroprotective	➤ Aerial part ➤ Flower	Aqueous-ethanolic Aqueous

Geographical Distribution:

The origin and historical distribution of red hibiscus is unknown. The genus hibiscus contains approximately 200 species distributed throughout tropical and subtropical regions. Hibiscus is commonly cultivated in garden ornament from sea level to 500m altitude. It is frost sensitive and will freeze in mild winters but will reproof from the base in spring. It does best in full sun in well drained fertile soil high in organic matter.

Species Interconnection and Interdependencies:

The morphology of the flowers suggests pollination by hummingbirds and sunbirds that are attracted to nectar producing, red flowers.

Toxicity:

The Sprague Dawley male rats were subjected to 14 days oral administration of ethanol flower and leaf extracts of *H. Rosa sinensis* up to dosage of 500 mg/kg. The histological studies showed that regardless the extract type or the flower morphotype (red and white); there were no toxicological effects on the liver that could have led to hepatic injury.

Discussion

Various medicinal plants are being employed to cure a variety of ailments. India is home to the decorative shrub known as *Hibiscus Rosa sinensis*. According to some reports, the *hibiscus Rosa sinensis* plant can help treat conditions like diabetes, inflammation, and hepatitis. The pharmacological and therapeutic actions that have been researched scientifically. *Hibiscus* flower, leaf, and stem extract has great antioxidant activity that lowers the risk of certain illnesses, according to in-vitro research. Public health is greatly endangered by the control of microbes, sporadic epidemics brought on by drug-resistant germs, and recently undiscovered disease-causing microbes. *Hibiscus* flower and leaf extract has an antibacterial action on a variety of harmful bacteria, which lowers the chance of contracting a number of infectious disorders. Additionally, the prevalence of diabetes is rising globally every day. Numerous studies have suggested utilising medicinal herbs to lower the chance of developing diabetes.

Conclusion:

This review summarizes the phytochemistry, pharmacology, and medicinal uses of this flower with the purpose of finding gaps demanding for future research and investigating its therapeutic potential through clinical trials. A thorough assessment of recent studies on the phytochemistry and therapeutic applications of *H. Rosa sinensis* has been provided in this study. Because there hasn't been sufficient research done in some areas, more research needs to be done to understand how phytochemicals, such those with anti-cancer properties, work. *Hibiscus Rosa sinensis*, which belongs to Malvaceae family, has been widely used as a traditional remedial plant in China and several tropical countries. All of its parts have been used in the treatment of fever, inflammation, bacterial infections, and even as contraceptive agent. Flavonoids, tannins, terpenoids, saponins, and alkaloids are the main phytochemicals as they are present in different extracts, and are more likely responsible for their biological activities. Lower toxicity of this plant can be an advantage to qualify it to be used as new therapeutic agent.

This review has presented a comprehensive summary of recent studies on the phytochemistry and the medicinal uses of *H. Rosa sinensis*. In some areas, the research is very limited and therefore further studies must be carried out to explore the phytochemicals mechanism of action such as anti-cancer activity. However, these biological compounds must be first isolated and identified successfully. Moreover, clinical trials on the

toxicity of this plant and its pharmacological effects must be carried out to assess its safe application and desirable side effects. Sabdariffa as promising herbal drug because of its safety and effective and effectiveness. The chemical constituents, pharmacological effects and therapeutic importance of *Hibiscus rosa-sinensis* were discussed in this review as a promising medicinal plant with a wide range of pharmacological activities that could be used in a variety of medical applications due to its efficacy and safety.

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