

A Review: A Pharmacological Review on Hibiscus Rosa-sinensis

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Abstract: The present study of pharmacological review of Hibiscus roseus. Hibiscus is rosasinensis Linn. Having family Malvaceae. The chemical constituents of hibiscus roseus contain tannins, flavonoids, alkaloids, terpenoids, saponins, cardiac glycoside proteins, free amino acids, carbohydrates reducing sugar, essential oils, and steroids. The study on hibiscus roseus shows its pharmacological activities such as its acts as an anti-inflammatory, anticonvulsant, antipyretic, antiparasitic, dermatological, antimicrobial, antitussive, neuroprotective, antioxidant, and antidiabetic. The current review will discuss the chemical constituents, pharmacological activities, and importance of hibiscus roseus.

Keywords: Hibiscus roseus, pharmacological, therapeutic, chemical constituents, etc

I. INTRODUCTION

Many plants include secondary metabolites, which are organic elements that are not generally engaged in regular organism growth and development but frequently play an essential part in plant defense [1]. Hibiscus roseus, a member of the Malvaceae family and the Magnoliopsida class, is a plant that grows from seeds. The genus Hibiscus has 300 species. Hibiscus flower has traditionally been reported to have analgesic, antioxidant, anti-inflammatory, anti-diabetic, anti-microbial, anti-tumor, anti-modulatory, memory enhancement, hepatoprotective, antitussive, dermatological, urinary, fibrinolytic, and many other effects [2]. Many of them have had a significant impact on the pharmacological effect and the development of superior therapeutic effects for various diseases.[3]

II. PLANT PROFILE

Hibiscus arnottii Griff. ex Mast., Hibiscus bryanis DC., Hibiscus cooperi auct, Hibiscus festalis Salisb., Hibiscus liliiflorus Griff. ex Mast., Hibiscus rosiflorus Stokes, and Hibiscus stock Seem are all synonyms.

Taxonomic classification:

Kingdom: Plantae

Subkingdom: Tracheobionta

Superdivision: Spermatophyta

Division: Magnoliophyta

Class: Magnoliopsida Subclass: Dilleniidae

Order: Malvales

Family: Malvaceae,

Genus: Hibiscus,

Species: Hibiscus rosa-sinensis[4]

Common Names

Arabic: Bent EL-Kunsil, Ward El-Jemal, Khatmah Siniyah, Hab misk Seni, Pooq Seni; Chinese: Zhu jin, Da hong hua, Fo sang, Fu sang; English: China-rose, Chinese hibiscus, Hawaiian hibiscus, hibiscus, rose-of-China; French: Hibiscus de Chine, Hibiscus rose de Chine, Rose de Chine; German: chinesisches Roseneibisch; Italian: Rosa della Cina; Japanese: Aka-bana, Fusou, Haibisukasu; Portuguese: rosa-da-China; Spanish: clavel japonés; Swedish: hibiscus.



Figure 1: Hibiscus Rosa-sinensis

In Hindi Hibiscus rosa sinensis is known as gurchal. The common name of Hibiscus rosa sinensis is tropical hibiscus, Chinese hibiscus. It belongs to the Malvaceae family. This is a glabrous shrub and is widely cultivated in the tropics. In India, it is a perennial ornamental shrub that is available easily. The height of the plant is between 7 to 12 feet and spread from 6 to 10 feet. There are so many. Pharmacological and pharmaceutical importance of Hibiscus rosa sinensis. It shows various pharmacological activities such as aphrodisiac, laxative, and 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 anticomplementary activity [5].

II. CHEMICAL CONSTITUENTS

The edible portion of the flower (61.6 %) was reported to have the following nutrient composition (per 100 g): Moisture 89.8 %, nitrogen 0.064 %, fat 0.36 %, crude fiber 1.56 %, calcium 4.04 mg, phosphorus 26.68 mg, iron 1.69 mg, thiamine 0.031 mg, riboflavin 0.048 mg, ascorbic acid 4.16 mg and niacin 0.61 mg. Petals of Hibiscus rosa-sinensis were reported to contain quercetin-3-di-O- β -D-glucoside; quercetin-3-7-di-O- β -D -glucoside; quercetin-3-O- β -D-sophorotrioside; and kaempferol and kaempferol-3-O- β -xylosylglucoside. The major anthocyanin contained in the red flowers of H. rosa- sinensis was cyanidin-3-sophoroside. Red-petalled varieties of H. rosa-sinensis were found to have more anthocyanin bands compared with that observed in yellow-yellow orange varieties. The varieties in the different colored groups differed in the quantitative distribution of anthocyanins, leucoanthocyanins, flavonol, and carotenoids. Flavonoid aglycones found in the flowers (per gm fresh tissues) included quercetin 7 mg and cyanidin 36 mg. The flowers were also reported to contain the following flavones: quercetin-3-diglucoside, quercetin-3, 7-diglucoside, cyanidin-3, 5-diglucoside and cyanidin-3-sophoroside-3-5 glucoside from deep yellow and white flowers and from ivory white flowers is kaempferol-3- xylosylglucoside. Leaves and stems contain β -sitosterol, stigma sterol, taraxeryl acetate, and three cyclopropane compounds And their derivatives. Fatty acids, fatty alcohols, and hydrocarbons were identified from Hibiscus rosa Sinensis leaves. Quercetin, β -sitosterol, and linoleic acid can be selected as bioactive markers for the Quantification of the Hibiscus rosa sinensis flower.[6]

Table 1: Chemical constituents

Sr.no	Plant Part	Chemical constituents
1.	Flowers	Thiamine, Riboflavin, Niacin and Ascorbic acid, Apigenidin, citric acid, fructose, glucose, oxalic acid, pelargonidin, and quercetin.
2.	Leaves	Alkaloids, glycosides, reducing sugars, fatty materials, resin and sterols, Fatty acids, fatty alcohol, hydrocarbon, sterculic, and malvalic acid.
3.	Roots	Glycosides, tannins, phytosterols, fixed oils, fats, proteins, amino acids, flavonoids, Saponins, gums, and mucilage.
4.	Stem	Teraxeryl acetate, β -sitosterol, and the cyclic acids sterculic and malvalic acids.

Traditional Uses:

Hibiscus rosa sinensis has been utilized for millennia in Siddha treatment, a historic Tamil system from South India. Hibiscus extracts have long been utilized in Ayurvedic medicine to treat a variety of diseases. The plants contain natural health benefits that may be utilized to organically cure ailments. They are also used to treat diseases such as coughing, colds, hair loss, and greying of the hair. This plant's blooms and leaves are used extensively in hair care. These are mashed into a fine paste with water and used as a shampoo and conditioner. The herb also aids in the improvement of hair texture and health. These are mashed into a fine paste with water and used as a shampoo and conditioner. The herb also aids in the improvement of hair texture and health. Hibiscus is a sweet and sour plant that is used to make herbal drinks. It functions as an antioxidant and aids in cholesterol lowering. It has also been used in traditional medicine to treat colds, loss of appetite, and respiratory tract diseases. The herb has anti-inflammatory, expectorant, and diuretic properties. Rosa sinensis hibiscus has been reported to have emmenagogue properties, which can promote menstruation and induce miscarriage in certain people.

Pharmacological Activity:-

1. Antimicrobial Activity

The antibacterial activity of Hibiscus rosa-sinensis extracts was measured against Gram-positive and Gram-negative bacteria and fungus species. In comparison to E.coli and Bacillus subtilis, the leaf extract demonstrated excellent activity against Staphylococcus aureus at extremely low concentrations (2.5g/ml). In comparison to Aspergillus niger, leaf extract showed excellent activity against Candida parapsilosis at a relatively low dose (2.5g/ml). At a relatively low concentration (2.5g/ml), the Hibiscus rosa Sinensis root extract showed excellent efficacy against all of the tested microorganisms. When compared to Trichophyton rubrum, root extract showed excellent efficacy against Candida parapsilosis and Aspergillus niger at relatively low concentrations (2.5ug/ml).

2. Anti-inflammatory

An ethanol extract of dried leaves given intraperitoneally to rats at a concentration of 100.0mg/kg caused active carrageenin-induced pedal edema. The anti-inflammatory action of hibiscus rosa sinensis is explained by Vivek Tomer et al. Hibiscus rosa sinensis is used to treat a variety of inflammatory disorders, including gonorrhoea, bronchitis, and oral mucosa irritation. Methanolic extract of hibiscus rosa sinensis leaves was employed for anti-inflammatory activity. Indomethacin is used as a control for carrageen, and dextran causes inflammation.[8].

3. Antipyretic Activity

Antipyretic properties 24 A.R. Sawarkar et al investigated the antipyretic activity of Hibiscus rosa sinensis in rats. The antipyretic effect of Hibiscus rosa sinensis leaves and v Wistar rats were evaluated. When compared to the control group, aqueous and alcoholic extracts of Hibiscus rosa sinensis were employed to minimize the elevated temperature. Wound healing activity 25 was carried out by B.Shivnanda Nayak et al.[9].

4. Wound Healing

In their investigation on Sprague Dawley rats, they employed an ethanolic extract of Hibiscus rosa sinensis with wound healing activities. When compared to the control group, animals treated with an ethanolic extract of Hibiscus rosa sinensis had an 86% reduction in wound area.[10].

5. Cancer Prevention

Cell lines from oral cancer For 24 hours, KB was treated with 75 g and 125 g of h. rosa sinensis oil extract. After putting the treated cells into a DNA fragmentation experiment and utilizing agarose gel electrophoresis, it was discovered that the DNA of the cells from both concentrations was fragmented when compared to the control sample. This suggests that the hibiscus extract inhibited the development and division of oral cancer cells. [11].

6. Anticonvulsant Properties

V.S.Kasture et al. present data on the anticonvulsant effect of ethanolic extracts of *Hibiscus rosa sinensis* flower. According to bioassay-guided fractionation, the anticonvulsant activity was found in the acetone-soluble component of an ethanolic extract of *Hibiscus rosa sinensis* flower. This fraction protects the animals from lithium-pilocarpine, electrical shock and kindling, and pentylene tetrazole, all of which cause convulsions in mice. The ethanolic extract of *Hibiscus rosa sinensis* showed substantial anticonvulsant efficacy.[12].

7. Dermatological Impact

The wound-healing ability of an ethanolic extract of *Hibiscus rosa-sinensis* flowers (5 and 10% w/w) in rats was investigated using three distinct models (excision, incision, and dead space wound). The extract boosted cellular proliferation and collagen production at the wound site, as demonstrated by an increase in granulation tissue DNA total protein, and total collagen content. Chemical ingredients, pharmacological properties, and therapeutic relevance of *Hibiscus rosa-..* heal significantly quicker, as evidenced by enhanced rates of epithelialization and wound contraction. When compared to controls, the extract of *Hibiscus rosa-sinensis* considerably (P0.001) improved wound-breaking strength in the incision wound model. The extract-treated wounds epithelialized faster, and the rate of wound contraction was considerably (P0.001) faster than the control wounds. Wet and dry granulation tissue weights increased considerably (P0.001) in a dead space wound model [13].

8. Hair Growth Enhancing Activity

In a study utilizing Wister albino rats, the petroleum ether leaf extract of *Hibiscus rosa sinensis* was found to be an effective hair growth booster. The 5% w/w extract ointment resulted in 4.91 0.261 mm hair length after 14 days, compared to 6.06 0.431 mm in the 2% minoxidil-treated group and 2.21 0.108 mm in the negative control group. Minoxidil gave 2315 05.78 hairs per cm² area, whereas the extract gave 1937 37.84 hairs per cm² area. When compared to a synthetic hair growth-boosting ointment, the alopecia was generated by sonic stress, and there were no side effects such as erythema or edema. Similarly, 5.97 0.13 mm hair length and 2058 19.23 hairs were seen in 5% hydrochloric leaf extract. Per cm² area.[14].

9. Antifungal Activity

Previous research has revealed that methanol extracts produced from the leaves of *Hibiscus rosa-sinensis* exhibit antibacterial activity against *Candida albicans*, *Aspergillus niger*, *Candida parapsilosis*, and *Trichophyton rubrum*. Using the good diffusion method and after a 24-hour incubation period at 37° C, the maximum observed zone of inhibition was 9.3 0.57 mm against *Aspergillus niger* and 6.6 0.57 mm against *Candida albicans* at an 80 g/ml concentration of leaves methanolic extract. These fungi were isolated from affected skins, and the chemical compounds responsible for antifungal action might include flavonoids, tannins, terpenoids, saponins, or alkaloids discovered in the study.[15]

10. Antioxidant Action

Total flavonoids, total phenolic contents, DPPH free radical scavenging activity, and % inhibition of linoleic acid oxidation capability were used to assess the antioxidant properties of various solvent extracts of *Hibiscus rosa-sinensis*. Total phenolic 61.45 3.23 and 59.31 4.31 mg/100g as gallic acid equivalent, total flavonoids 53.28 1.93 and 32.251.21 mg/100g as catechine equivalent were found in methanol and ethanol extracts of *Hibiscus rosa-sinensis*. DPPH free radical scavenging activity was 75.464.67 and 64.98 2.11%, respectively, while suppression of linoleic acid oxidation potential was 75.83.22 and 61.6 2.01%.[16]

11. Anti-Haemolytic Activity

Hibiscus rosa-sinensis flowers were tested for anti-hemolytic action in vitro. The floral extract was incubated with erythrocytes at various doses and examined for hydrogen peroxide-induced hemolysis and lipid peroxidation as markers of erythrocyte damage. In vitro, the extract dramatically decreased hydrogen peroxide-induced hemolysis and lipid peroxidation.[17]

12. The Urinary Effect

The antithetic potential of an aqueous extract of *Hibiscus rosa-sinensis* flowers was tested in vitro. The presence of calcium oxalate crystals was assessed both immediately and 24 hours after stone induction. *Hibiscus rosa-sinensis* extract decreased crystal aggregation after 24 hours. The extract inhibited early stages of stone formation and might be used as an alternate therapy or prophylaxis for urolithiasis [18].

13. Antitussive Activity

The antitussive efficacy of a methanolic extract of *Hibiscus rosa-sinensis* was tested in a histamine chamber using a citric acid (7.5%W/V) induced cough model. Coughing was greatly reduced by a methanolic extract of *Hibiscus rosa-sinensis* and codeine[19].

III. RESULT AND CONCLUSION

The current review discussed the chemical constituents, pharmacological effects, and therapeutic significance of *Hibiscus rosa-sinensis* as a promising medicinal plant with a diverse range of pharmacological activities that could be used in a variety of medical applications due to its efficacy and safety. According to the results obtained, it is concluded that the hibiscus rhesus extract has pharmacological action. The plant has antipyretic, antiparasitic, antibacterial, anti-inflammatory, hair growth stimulating, wound healing activity, anticonvulsant, antioxidant, and other medicinal properties.

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