

## Review on Hibiscus Rosa-Sinensis Flowers

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### ABSTRACT

In India, the hibiscus rosa-sinesis (HS) flower is well-known and is used to worship Lord Ganesha. China rose, or Hibiscus rosa sinensis, is a member of the Malvaceae family. In numerous tropical nations, this plant has a wide range of significant medical benefits for treating wounds, inflammation, fever and coughing, diabetes, infections caused by bacteria and fungi, hair loss, and gastric ulcers. According to phytochemical analysis, flavonoids, tannin, terpenoids, saponins, and alkaloids are the principal bioactive substances in charge of its therapeutic benefits. Various pharmacological properties, including anti-pyritic, analgesic, anti-inflammatory, anxiety study, and anti-depressant, were demonstrated by experiment from recent study. These reviews seek to provide information on the different pharmacological and pharmaceutical uses of Hibiscus rosa sinensis. The article discusses a few literary works that are based on the studies conducted on Hibiscus rosa sinensis.

### I. INTRODUCTION

Secondary metabolites are organic compounds found in many plants that are not typically involved in the growth and development of organisms but frequently play a crucial role in plant defence [1]. One of the most significant sources of medications comes from plants. The traditional medical system known as "Ayurveda" makes considerable use of medicinal plants worldwide [2]. Given that it is mostly found in south-east China and a few islands in the Pacific and Indian Oceans, the lovely flowering plant Hibiscus rosasinensis is frequently referred to as the "Queen of the Tropics" or the "China rose." One of Hawaii's beloved national plants, the hibiscus, is frequently worn in the hair for ceremonial purposes [3]. This plant belongs to the subkingdom Magnoliophyta and to the class Magnoliopsida, meaning that it is a vascular plant that produces seeds. It belongs to the family Malvaceae, and it is one of the 300 species of the genus Hibiscus [4].

### Scientific Classification.



Fig:Hibiscus Rosa Sinensis

Kingdom	:- Plantae
Division	:- Magnoliophyta
Class	:- Magnoliopsida
Order	:- Malvales
Family	:- Malvaceae
Genus	:- Hibiscus L.
Species	:- rosa

### Botany

The shrubby species of Hibiscus rosa-sinensis, which typically grows to a height of 4 metres, is evergreen and has oval branches with stalks that measure 10 cm broad by 15 cm long [5]. The majority of flowers are located on long stalks, are about 20 cm wide, and have whorled oval petals (egg-shaped), smooth edges, and are joined at the base to the central stamina column [6]. A style with five lobes at the tip and numerous yellow anthers is part of this central column. Moving on to the flower's outer layer, we can see that its cup-shaped calyx measures 2.5 cm long, and its epicalyx is made up of 5 or 7 bracteoles that are

each 1 cm long. Typically, flowers are borne in single shapes. [5,6].

### Phytochemistry

A diverse spectrum of chemicals can be found in every region of *H. rosa sinensis*. Phlobatannins, glycosides, saponins, flavonoids, terpenoids, as well as other substances including thiamine and niacin, have reportedly been found in leaves, flowers, stems, and roots [7]. The pharmacological effects of the plant were attributed to the presence of glucosides, flavonoids, phytosterols, terpenoids, tannins, and phenolic compounds, according to Patel and Adhav, whose investigation was conducted on four different morphotypes of *H. rosa sinensis* [8]. This revealed that despite differences in bloom colour, phytochemical compositions were quite similar. These results are in agreement with those of a different study that used thin layer chromatographic analysis [9].

The edible flowers often have high concentrations of moisture, nitrogen, fat, crude fibre, calcium, phosphorus, and iron. Numerous flavones, including cyanidin-3,5-diglucoside and cyanidin-3-sophoroside, are present in the yellow blossoms. 3,5-Glucoside the quercetins 3,5-diglucoside and 3,7-diglucoside. White flowers include kaempferol-3-xylosylglucoside Isolate, along with the previously reported chemicals [10]. The leaves also include gentisic acid, mucilage, catalase, and around 7.34 mg of carotene per 100 gm, in addition to fatty acids, fatty alcohols, and hydrocarbons. On the other hand, root barks contain cyclopropenoids. Quercetin is present in all sections of *Hibiscus rosa Sinensis*, despite the fact that cyanin and cyanidin chloride's are only present in trace levels in the flowers, stems, and leaves. However, only the stems and leaves can contain  $\beta$ -sitosterol, teraxeryl acetate, and malvalic acids.

### Traditional Uses of *Hibiscus rosa sinensis* [11,12]

- The roots of *Hibiscus rosa sinensis* Linn can be used as a cough suppressant.
- Leaves and flowers can be used as a hair growth promoter and to prevent premature graying and to treat scalp disorders.
- Leaves possess emollient properties, it can be used in the treatment of Dysentery and Diarrhea.
- The flowers is reported to be good for the treatment of heart diseases, diabetes, epilepsy, leprosy, etc.

- The decoction of root can be used to treat venereal diseases.
- Leaves can be used as abortifacient and to stimulate the expulsion of placenta after labour.
- The roots and leaves can be used to stimulate blood circulation and thereby they help to regulate menstruation.
- The flowers of *Hibiscus rosa sinensis* can be used to control high blood pressure, stomach pain, liver diseases, etc.
- Hibiscus rosa sinensis* can be used as a diuretic.
- The fruits can be used in sprains, wounds etc.

### Pharmacological effects

#### 1. Antibacterial Activities :

*Pseudomonas aeruginosa*, *Escherichia coli*, *Enterobacter aerogenes*, and *Streptococcus pyogenes* were all proven to be susceptible to the antibacterial properties of the methanol extracts made from the leaves of *H. Rosa-sinensis*. At an 80 g/ml concentration of leaves methanolic extract, the largest observed zone of inhibition using the well diffusion method was 13 mm and it was against *E. coli*, followed by 12 mm against both *S. aureus* and *E. aerogenes* [13]. Incubation was place for 24 hours at 37° C. These microorganisms were taken from sick skin, and the study's identification of flavonoids, tannins, terpenoids, saponins, and alkaloids may be to blame for the chemical compounds that have the antibacterial action [14].

#### 2. Antioxidant Effect:

Based on the % inhibition of DPPH and ferric reducing antioxidant power (FRAP) experiments, the radical scavenging activity of *Hibiscus Rosa-sinensis* flower extracts was assessed. The findings demonstrated that the flower sample had a substantial amount of antioxidant conditioning and was dependent on birth detergents. High tannin and anthocyanin levels and high ferric-reducing antioxidant activity were found in a water-less hibiscus extract [15].

#### 3. Dermatologicaleffect:

The research on hair growth showed that HRSF had outstanding hair growth-promoting action by increasing follicular size and extending the anagen phase. When all the groups were statistically evaluated, it was discovered that the hair growth activity in animals treated with a combination of both extracts was considerably

higher than that in CGF but less than that in HRSF [16].

#### **4. Antifungal activity:**

Previous research has demonstrated that methanol extracts made from *Hibiscus rosa-sinensis* leaves have antimicrobial effects on *Trichophyton rubrum*, *Candida parapsilosis*, *Aspergillus niger*, *Candida albicans*, and *Candida parapsilosis*. The maximal zone of inhibition measured by the well diffusion method after a 24-hour incubation period at 37° C 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 acquired from sick skin, and the study's identification of flavonoids, tannins, terpenoids, saponins, and alkaloids may be to blame for the chemical compounds that have the antifungal action [17].

#### **5. Anti-inflammatory:**

Active carrageenin-induced pedal edoema was caused by the intraperitoneal administration of dried leaf extract in ethanol to rats at a dose of 100.0 mg/kg. *Hibiscus rosa sinensis*' anti-inflammatory properties are explained by Vivek Tomer et al. *Hibiscus rosa sinensis* is used to treat a wide range of inflammatory disorders, including bronchitis, oral mucosa inflammation, and blenorrhoea. The methanolic extract of *hibiscus rosa sinensis* leaves was employed for anti-inflammatory properties. Dextran causes inflammation and is used as a common treatment for carrageen [18].

#### **6. Anti-diabetic activity:**

The alcohol leaves extract of *Hibiscus rosa sinensis* was shown to be an oral hypoglycemic agent in non-obese type I diabetic mice. When utilising concentrations of 100 and 200 mg/kg of body weight, it decreased blood glucose levels from 281.6 3.7 mg/dl to 92.2 2.63 and 83.8 3.15 mg/dl, respectively, in contrast to 103.37 2.13 mg/dl in insulin-injected NOD mice, which was utilised as the positive control [41]. After 5 weeks of oral dosing, the studied extracts also significantly decreased levels of triglycerides, blood urea, glycosylated haemoglobin, and cholesterol [19].

#### **7. Hair Growth Promoting Activity:**

In a study utilising Wistar albino rats, the petroleum ether leaf extract of *Hibiscus rosa*

*sinensis* was found to be an effective hair growth booster. After 14 days, the 5% w/w extract ointment produced hair that was 4.91 mm longer than the negative control group and 6.06 mm longer than the 2% minoxidil-treated group. In comparison to Minoxidil, which produced 2315 05.78 hairs per cm<sup>2</sup> of area, the extract produced 1937 37.84 hairs per cm<sup>2</sup>. In contrast to synthetic hair growth boosting ointments, exposure to sonic stress caused the alopecia, and there were no side effects like erythema or edoema. Similarly, 5.97 0.13 mm hair length and 2058 19.23 hairs per cm<sup>2</sup> area were seen in 5% HCl leaf extract [20].

#### **8. Wound healing property:**

Sprague Dawley rats' wounds began to heal after being treated with an ethanolic extract made from *Hibiscus rosa-sinensis* flowers, which contained polyphenols, tannins, carboxylic acids, triterpenoids, and alkaloids. After 15 days, taking a daily dose of 120 mg kg<sup>-1</sup> reduced the period of epithelialization to 11.2 0.13 and caused a 49% reduction in the wound area, as measured by the excision model, compared to only 33% in the control group. The extract improved granulation tissue's dry weight, hydroxyproline content, and skin breaking strength in dead space wounds and incision models to 515.0 39.56, 33.50 2.89, and 47.66 10.64, respectively [21].

#### **9. Neuroprotective activity:**

The central nervous systems of Swiss albino mice and Wistar rats respond favourably to the methanolic extract of *H. rosa-sinensis* roots. When used to produce writhing, 200 mg/kg i.p. of the extract had an analgesic effect since it reduced pain perception by 78.5%, as opposed to 81.0% in the group treated with 30 mg/kg of diclofenac [66]. Lithium reduced the amount of head twitches compared to a positive control, ondansetron, a 5HT<sub>3</sub> antagonist, which was 9.0 1.7, to 10.2 1.06. Pentobarbital ability to induce sleep was also prolonged, which suggests that it has sedative effects by inhibiting dopaminergic transmission [22].

#### **10. Anti Cancer:**

cell lines for oral cancer KB were given 24 hours of treatment with 75 g and 125 g of *h. rosa sinensis* oil extract. It was discovered that the treated cells' DNA had been fragmented compared to the control sample after the treated cells were put through a DNA fragmentation assay and electrophoresis on an agarose gel. This indicates

that hibiscus extract prevented the proliferation and development of oral cancer cells. [23].

## **Chemical Constituents**

### **1. Flavonoids**

It has been discovered that the flowers of hybrid hibiscus plants (Nos. 2209 and 2332) contain the glycoside hybridin. It contains quercet, which can be found in the new quercetin bioside 3—D-xylopyranoside-D-galactofuranoside[24]. The two most often seen flavonoid aglycones were the flavonol quercetin and the anthocyanin cyanidin. The amounts of quercetin in the flowers ranged from 2 to 192 mg/g, with the flowers with white or cream-colored petals having the greatest levels [25].

### **2. Tannins**

According to a phytochemical analysis, Hibiscus rosa-sinensis contains tannins, quinines, phenols, flavonoids, alkaloids, terpenoids, saponins, cardiac glycosides, protein, free amino acids, carbohydrate, reducing sugar, mucilage, essential oils, and steroids [26]. The total phenol, tannin, alkaloid, and flavonoid contents of hibiscus tiliaceus L. Wood extracts from petroleum ether, ethyl acetate, and methanol were examined in this study. Comparing ethanol extract to petroleum ether and methanolic extract, ethanol extract revealed higher phenol, alkaloid, flavonoid, and tannin contents [27].

### **3. Alkaloids**

This study aimed to ascertain the range of concentrations of the fractions comparable to the acetylcysteine effect of 0.1% and the effect of fractions containing alkaloids of red hibiscus flower types regarded as mucolytics in vitro. This research used maceration, VLC fractionation, identification of alkaloid-containing fractions, and mucolytic activity tests on alkaloid-containing fractions. To reduce the viscosity of bovine mucus, an in vitro experiment for mucolytic activity was conducted [28]. In the current examination, it was discovered that the plant's leaves, stem, and root contain phenols, alkaloids, tannins, flavanoids, and saponin. These findings were also supported by TLC analysis. The best findings from a quantitative investigation of the stem, leaves, and root revealed that the plant's leaves contain a higher concentration of phenolics. However, alkaloids are present in all parts of the plant [29].

## **Bioactivity of hibiscus components:**

One of the medicinal plants, hibiscus is frequently used to treat conditions like cancer and hypertension caused by oxidative stress. This is due to the fact that they contain potent antioxidants such alkaloids, flavonoids, and anthocyanins. Anthocyanins are helpful in the treatment of cancer, cardiovascular disease, and age-related illnesses like dementia or Alzheimer's disease [30, 31]. Flavonoids have the power to activate the human body's defence mechanisms. Additionally, they have been discovered to defend against a wide range of pathogenic bacterial and viral illnesses, including degenerative conditions like cancer, cardiovascular disease, and other age-related problems [32].

## **Extraction procedure of Hibiscus rosa-sinensis**

I bought a hibiscus rosa-sinensis flower from a neighbourhood peddler. It was mechanically crushed into a coarse powder. Hibiscus rosa-sinensis (flower) coarse dry powder weighing 500 g was placed in a 2000 ml conical flask along with 1000 ml of methanol. It was maintained at a temperature of 25 to 30 °C for 72 hours in an airtight container.

It was then filtered using regular filter paper. 1000 cc of filtrate was stored in the beaker. Following filtration, the filtrate was concentrated using a rotary evaporator at other ambient conditions and a temperature range of 40 to 45 °C. 1.85% weight-for-weight was the extraction yield percentage. The extract was kept in airtight glass vials with the appropriate label at room temperature.

## **II. RESULTS AND DISCUSSION**

The current review discussed the chemical constituents, pharmacological effects and therapeutic importance of Hibiscus rosa-sinensis as a promising medicinal plant with wide range of pharmacological activities which could be utilized in several medical applications because of its effectiveness and safety. According to the obtain data it is conclude that the extract was hibiscus roesus have pharmacological activity. The plant is effective for herbal alternative to many disease such as antipyretic, antiparasitic, antimicrobial, Anti-inflammatory, hair growth promoting, wound healing activities, anticonvulsant, antioxidant, etc.

## **III. CONCLUSION**

A common traditional remedy in China and other tropical nations is hibiscus rosa sinensis,

a member of the Malvaceae family. The current review discussed the chemical components, pharmacological effects, and therapeutic importance of *Hibiscus rosa-sinensis* as a promising medicinal plant with a wide range of pharmacological activities that could be used in several medical applications due to its efficacy and safety. Inflammation, bacterial infections, fever, and even contraception have all been treated with its constituent elements. The primary phytochemicals that are found in various extracts and are most likely in charge of their biological activities are flavonoids, tannins, terpenoids, saponins, and alkaloids. A benefit that could make this plant more suitable for utilisation is its lower toxicity.

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