

PHARMACOLOGY AND PHYTOCHEMISTRY OF ROSA SINENSIS

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Abstract- *Hibiscus Rosasinesis* is known as China Rose belonging to family *Malvaceae* also known as mallow family. *Hibiscus Rosasinesis* commonly known as Gurhal is large shrub belonging to family *malvaceae*. *Hibiscus rosa sinensis* is used as medicinal compound from ancient time and also used on human being they are working on to treat various disease in humans like, Treating wounds, inflammation, fever, and cough, infection caused by bacteria, fungi, hair loss also used in diabetes, and gastric ulcers in several topical countries and the study on *hibiscus Rosasinesis* that shows the pharmacological Activity such as it act as anti-inflammatory, antipyretic, antimicrobial, dermatological, anticonvulsant, antiparasitic, neuroprotective, antitassive, antioxidant, Anxiety and also in anti-depressant and antidiabetic etc. The chemical constituents present commercially available drug in the phytochemical study/analysis showed that *Hibiscus rosa-sinensis* contained, as alkaloids, flavonoids, terpenoids, saponins, tannins cardiac glycoside, carbohydrates reducing sugar, essential oil, steroids proteins and free Amino acid. The main aim of these present study to chemical constituent, traditional uses, pharmacological activities and importance of *Hibiscus Rosa sinensis*.

Keywords: Hibiscus Rosa Sinensis, Tropical fruit, Antioxidant, Nutraceutical, Pitaya, Phytochemicals, Health benefits, Pharmacological active.

Introduction

Rose or "Queen of the Tropics" is the most popular name for the beautiful hibiscus flower because it is found in eastern China and some islands in the Pacific and Indian Oceans. The hibiscus flower is one of Hawaii's national plants and is often worn in hair during culture.^[1] Hibiscus contains tannins, anthraquinones, quinines, phenols, flavonoids, alkaloids, terpenes, saponins, cardiac glycosides, proteins, free amino acids, carbohydrates, reducing sugars, mucilage, essential oils and steroids stabilizing components.^[2] There are 300 species planted. Traditionally, hibiscus has been reported to be used as anti-inflammatory, memory enhancer, anti-diabetic, anti-inflammatory, anti-bacterial and anti-diabetic, anti-inflammatory, anti-tumour, anti-regulatory, hepatoprotective, dermatological, urinary, fibrinolytic, etc. effects. They play an important role in pharmacology and better treatment of many diseases.^[3] However, its use as traditional medicine is still limited and more research is needed. There are also very few hair growth products that use HRS as an activator and the rest are related to antibiotics.^[4] Hibiscus is a small, rare plant, 1.5–3.0 m (5.0–10 ft) wide and 2.5–5.0 m (8.0–16 ft) tall, with glossy leaves and pink flowers in summer. It is a bush. Many parts of the plant, such as leaves, roots and flowers, are known to have medicinal properties such as laxative, aphrodisiac and immune system. Hibiscus is a well-known evergreen plant from the *Malvaceae* family.^[5]

Scientific classification:

Hibiscus Rosa Sinensis (family:- *Malvaceae*)



Fig : 1

Kingdom: Plantae – plantes, Planta, Vegetal, plants

Subkingdom: *Viridiplantae* – green plants

Superdivision: *Embryophyta*

Division: *Tracheophyta* – vascular plants, tracheophytes

Subdivision: *Spermatophytina* – spermatophytes, seed plants, phanérogames

Class: *Magnoliopsida*

Family: *Malvaceae* – mallows, mauves

Genus: *Hibiscus L.* – rosemallow, rose-mallow

Species: *Hibiscus rosa-sinensis L.* – Chinese hibiscus, shoe-black plant.^[6]

Photochemistry:

Hibiscus is a well-studied plant. Data show that it contains tannins, flavonoids, steroids, alkaloids, saponins, total phenols, total flavonoids, and total hydroanthocyanidins. It is reported to contain mainly anthocyanins and flavonoids;^[7]

This shows that despite the difference in flower colour, the phytochemical composition is similar.

These results are consistent with those of different studies using thin layer chromatography analysis.^[8]

The roots of *H. sinensis* contain sterols, carbohydrates and glycosides, phenol compound stannings, triterpenoids, saponins, mucilages and flavonoids.^[9]

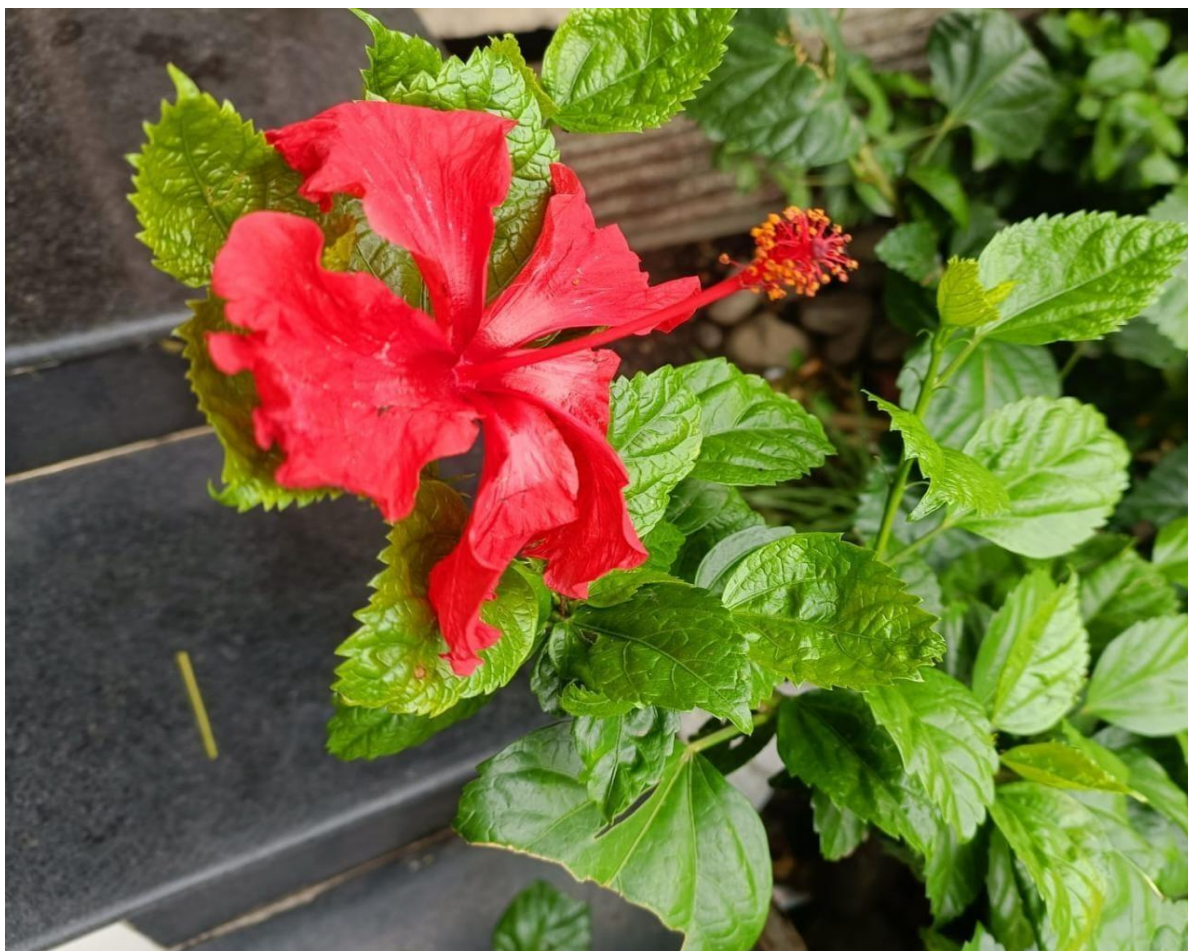


Fig : 2

Chemical constituents:

Preliminary phytochemical analysis shows that hibiscus flowers contain tannins, anthraquinones, quinines, phenols, flavonoids, alkaloids, terpenes, saponins, cardiac glycosides, proteins, free amino acids, carbohydrates, reducing sugars, mucilage, essential oils and steroids^[28] Hibiscus contains cyclopropanes, methyl sterolate, methyl-2-hydroxystearic acid, 2-hydroxystearic acid, malic acid and beta-sitosterol. The main anthocyanin in flowers is anthocyanin 3-sophorin^[29]

Pharmacological action:

Antibacterial activities

Pseudomonas aeruginosa, *Escherichia coli*, *Enterobacter aerogenes* and *Streptococcus pyogenes* have been shown to be sensitive to the antibacterial properties of the methanolic solution produced from rose petals. When the methanolic leaf extract concentration was 80 g/ml, the maximum inhibitory zone found using the pore diffusion method was 13 mm against *E. coli*, followed by 12 mm against *S. aureus* and *E. coli*. Aerobic bacteria^[10] Incubate at 37 °C for 24 hours. It is derived from bacteria on the skin, and flavonoids, tannins, terpenoids, saponins and alkaloids were identified in the study. This is based on drugs that can be mixed with antibiotics. Criminals.^[11]

Antioxidant activities:

The free radical scavenging effect of hibiscus flower extract was determined according to the percent inhibition of DPPH and ferric reducing antioxidant power (FRAP) assay. The results showed that the flower extract contains a large number of antioxidants and exhibits significant antioxidant properties in relation to the baby detergent. The anhydrous extract of hibiscus flowers has higher tannin and anthocyanin content and has greater iron-reducing antioxidant capacity.^[12] The antioxidant capacity of Hibiscus extracts obtained from different solvents was estimated by total flavonoid content, total phenolic content, DPPH-free revolutionary scavenging capacity and opportunistic inhibition of linoleic acid oxidation capacity. CH₃OH and CH₃CH₂OH of China Rose Extract, total phenolic content of 61.45 ± 3.23 and 59.31 ± 4.31mg/100g gallic acid and 53.28 ± 1.93 and 32.25 ± 10.2 mg showed total flavonoid content. Keweichacatenin Keweicha> scientist. DPPH free revolution clearance power is 75.46 ± 4.67 and 64.98 ± 2.11, and linoleic acid oxidation inhibition

Implicit is 75.8 ± 3.22 and 61.6 ± 2.01 , respectively.^[13] The relationship between the quantity and colour of the flowers and the antioxidant activity of the leaves was also examined using the DPPH test. In this study, the leaves of a plant with nine colours (red, yellow, white, orange, yellow/red, white/red, orange/red and two shades of red) were written separately.^[14] Maximum antioxidant activity and minimum IC₅₀ values were found as follows: 0.20 for white/red (multi-leaf methanol extract) and 0.19 for yellow (5-leaf ethanol extract). On the other hand, the orange/pink sample containing multi-leaf methanol extract and the red sample containing five-leaf ethanol extract showed the lowest antioxidant activity with 1.17 and 4.49 respectively.^[15]

Antifungal activities:

According to previous studies, methanolic extract prepared from hibiscus leaves has antibacterial activity against *Candida albicans*, *Aspergillus niger*, *Candida parapsilosis* and *Trichophyton rubrum*. Using the positive diffusion method, after 24 hours of incubation at 37 °C, the maximum inhibition zone found was 9.3 ± 0.57 mm against *Aspergillus niger*, followed by 6.6 ± 0.57 mm against *Candida albicans*. Followed by concentration $>80 \mu\text{g/ml}$. . methanolic extract of leaves. These fungi are derived from skin diseases, and the antibiotic compounds may result from the presence of flavonoids, tannins, terpenoids, saponins, or alkaloids found in this study.^[16]

Anti-cancer effect:

In vitro studies have proven that hibiscus extract can cause cancer apoptosis. Hibiscus flower polyphenol-rich extract (HPE) induces human gastric cancer (AGS) cell death in a concentration-dependent manner; This effect on HPE AGS cells is mediated by p53 signalling. Additionally, Hibiscus anthocyanin extract (natural pigment found in the dry calyx of *Hibiscus sabdariffa* L.) induces apoptosis and delphinidin 3-sabdi Glycoside in cancer cells. (Dp3-Sam), isolated from the dry calyx of the hibiscus flower, can induce apoptosis in human leukemia cells (HL -60)^[17] Oral cancer was treated with KB, 75 μg and 125 hours. DNA fragmentation analysis was performed on cells treated with rose oil extract for 24 hours and cellular DNA was found to be fragmented when compared to both concentrations using agarose gel electrophoresis. Check the model. This means that hibiscus flower extract inhibits the growth and development of oral cancer^[18]

Anti inflammation activities:

Tomar et al reported the antibacterial activity of methanolic extract of hibiscus leaves. Carrageenan and dextran-induced edema tests were performed on rat paws to monitor the effects of the herb.^[19] This test uses the nonsteroidal anti-inflammatory drugs (NSAIDs) indomethacin as a product with significant anti-inflammatory properties.^[19] Hibiscus methanol extract shows its effect at the third stage at 500mg per kilogram. There is no obvious way to prevent pain during the first two stages of the swelling process.^[19] In a study by Birari et al., the anti-inflammatory activity of ethanol extract of hibiscus flowers was evaluated using carrageenan-induced paw edema, cotton ball-induced granuloma, and xylene-induced ear swelling in mice^[20]

Hair growth promoting activities:

In a study using Wister albino rats, hibiscus petroleum leaf extract was found to be an effective hair growth agent. After 14 days, the 5% w/w extract ointment produced a hair length of 4.91 mm compared to 6.06 mm in the 2% minoxidil treatment group and the negative control. Square centimetre area in 1937, compared to minoxidil, which helped 2315 05.78 hairs per square centimetre. Compared to synthetic hair growth-promoting creams, exposure to sonic pressure causes hair loss even without side effects such as erythema or edema.^[21] Similarly, an ointment containing 5% Hydrocholine leaf extract found 2058 19.23 hairs per cm² area and a hair length of 5.97×0.13 mm^[22] The ability of *Rosa sinensis* aqueous flower extract to promote hair growth was evaluated in vitro and in vivo. In Wister rats, 2% extract resulted in 18.68 ± 0.3 mm hair length after 30 days, whereas 2% minoxidil resulted in 19.24 ± 0.4 mm hair length. After 72 hours of incubation, an increase in in vitro hair length of 1.73 ± 0.18 mm was observed compared to 1.95 ± 0.14 mm of the positive control.^[23]

Anti diabetic Activities:

Prevention of diabetes In non-obese mice, hibiscus juice extract was found to be an oral hypoglycemic agent. Use of concentrations of 100 and 200 mg/kg body weight reduced blood glucose from 281.6 ± 3.7 mg/dl to 92.2 ± 2.63 and 83.8 ± 3.15 mg/dl, respectively; In mg/dl, 103.37 ± 2.13 dl, respectively, good management.^[24] After 5 weeks of oral administration, the tested drug also reduced triglyceride, blood urea, glycosylated hemo, and cholesterol levels in alloxan-induced type II diabetic rats (150 mg/kg). While the blood sugar value of rats with 500 mg/kg body weight decreased from 300.23 ± 32.20 to 220.41 ± 20.40 mg/dl, the blood sugar value of rats administered glyburide (600 $\mu\text{g/kgbw}$) decreased to 175. It became .36 7 mg/1. dl, 15 years after day oral administration.^[25]

Cardiovascular effects:

The cardioprotective effect of Hibiscus dry powder on isoproterenol-induced myocardial damage in rats was investigated.^[26] The effect of hibiscus leaf aqueous extract (200 mg/kg) on kidney function in healthy rats was investigated. Although hibiscus leaf extract has a blood pressure-lowering effect, it caused an increase in Na⁺ level in lean rats (P<0.05) and thus may affect kidney functions, causing increased salt production.^[27]

Conclusion:

The pharmacological and phytochemical investigation of *Hibiscus Rosa Sinensis* highlights its diverse therapeutic potential, encompassing antibacterial, antioxidant, hair growth promotion, and diabetes management activities. The identified chemical constituents, including alkaloids, flavonoids, and essential oils, contribute to the plant's multifaceted pharmacological actions. While existing research illuminates the valuable properties of *Hibiscus Rosa Sinensis*, further investigations are crucial to deepen our understanding and explore additional medicinal applications. This review emphasizes the plant's significance in both traditional medicine and modern pharmacology, positioning it as a versatile botanical treasure. *Hibiscus Rosa Sinensis*, with its rich phytochemical composition, emerges as a promising candidate in herbal medicine. Its efficacy in various domains, such as antibacterial, antioxidant, anticancer, and anti-diabetic properties, underscores its therapeutic potential. However, caution is advised regarding potential impacts on kidney functions. This exploration calls for continued research to unravel the nuanced applications of *Hibiscus Rosa Sinensis* as traditional wisdom converges with modern scientific understanding, making it poised for integration into pharmaceutical and wellness domains.

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