WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES
SJIF Impact Factor 7.632
Volume 9, Issue 9, 662-672 Review Article ISSN 2278 – 4357

PHARMACOLOGICAL BENEFITS OF HIBISCUS ROSA-SINESIS FLOWER

Paviithraa P.* and Uma Mageshwari S.

Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, India.

Article Received on
23 June 2020,

Revised on 13 July 2020,
Accepted on 03 August 2020

DOI: 10.20959/wjpps20209-17004

***Corresponding Author**
Paviithraa P.
Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, India.

ABSTRACT

India is one of the nations blessed with a gorgeous heritage of traditional therapeutic methods and rich biodiversity to complement the herbal needs of the treatment controlled by these traditional therapeutic methods. Many of them have played a important role in pharmacological production and in emerging better healings for various diseases. Microscopic character of Flower shows that ebracteate, pedicellate, complete, regular, actinomorphic, bisexual, protandrous hypogynous, cyclic. Large, spinuous and yellow pollen grains. *Hibiscus rosa sinensis flower* contains anti fungal activity, anti oxidant activity, anti cancer activity, cardio productive activity, anti diabetic activity , Immune response activity, Gastro protective activity. The phytochemical review shows that *Hibiscus rosa Sinensis flowers* having rich in essential phytochemicals and the pharmacological review shows that efficacy of the flower in the health system to prevent communicable and non-communicable diseases and the potency of this flower used in the treatment of large number of diseases. Finally we conclude Scientific studies and reviews are proved that its having the lots of phytochemicals and essential medicinal properties.

KEYWORDS: *Hibiscus rosa sinensis flower*, phytochemicals, pharmacological activity, herbaceous plant.

INTRODUCTION

Hibiscus rosa-sinensis cultivates as an evergreen herbaceous plant. India is one of the nations blessed with a gorgeous heritage of traditional therapeutic methods and rich biodiversity to complement the herbal needs of the treatment controlled by these traditional therapeutic

methods.[2] A native to tropical and sub-tropical areas, this flower is widely cultivated as an ornamental plant. It bears large flowers on the bushy hedges. These huge flowers are generally dark red in color and are not usually odorous. Grown-up in different regions of Asian zone, these lovely flowers are meant by several other names such as China rose.[1]

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*.[3] The huge size and the reddish color and hues attract humming birds and the greens growing these flowers are frequently visited by the humming birds. Vigour, attractive foliage, strong root system, longevity, easy to maintain, good flowering characteristics, etc. are some of the physiognomies which are needed to be kept in mind while cross breeding the hibiscus plant.[1] In medicine, however, the red flowered variety is preferred.

Asmaa Missoum revealed that Current scientific works proposes that more than 50% of today's recognized medications were of natural product origin. Many of them have played a important role in pharmacological production and in emerging better healings for various diseases. This plant is economically very important owing to the herbal products and medicinal uses. Because of insuffiecient current pharmacological information, there is not much scientific research or clinical trials conducted on the chemical extracts of *Hibiscus rosa-sinensis* that could be crucial in exploring its fast potential medicinal applications.[3]

Vernacular names

Eng : Chinese Hibiscus, Shoe-flower plant.

Hin : Jasut, Java, Jasum, Odhul, Gurhal, Arahul.

Mar : Jasavanda, Jassvandi.

San : Japa, Java, Rudrapuspa, Aundrapuspa, Trisandhya.

Ben : Joba, Jiwa, Oru.

Guj : Jasvua, Jasunt.

Kan : Dasavala.

Mal : Himbarathi, Ayamparatti, Chebarathi.

Ori : Mondaro.

Pun : Jasum, Jaipushpa, Gurhal.

Tam : Sapattuu, Semparutti.

Tel : Dasanamu, Dasana, Mandarapuvvu.

Ara : Anghara-hindi.

Ass : Joba.

Ori : Mondaro.

Per : Angara-hind [1,2]

Plant profile

Hibiscus rosa-sinensis flower red variety

Botanical Name	***Hibiscus rosa-sinensis* L.**
Kingdom	*Plantae*
Subkingdom	*Tracheobionta* – (Vascular plants)
Super division	*Spermatophyta* – (Seed plants)
Division	*Magnoliophyta* –(Flowering plants)
Class	*Magnoliopsida* – (Dicotyledons)
Subclass	*Dilleniidae*
Order	*Malvales*
Family	*Malvaceae*
Genus	*Hibiscus*
Species	*Hibiscus rosa-sinensis*[1]

Description of the flower

- Flowers are pedicillate,
- Actinomorphi,
- Pentamerous and complete,
- Corolla consists of 5 petals,
- Red in colour and about 3 inches in diameter.[2]

Macroscopic characters

- Flower ebracteate, pedicellate, complete, regular, actinomorphic, bisexual, protandrous hypogynous, cyclic.
- Epicalyx 5, free, green, linear.
- Calyx 5, gamosepalous, campanulate, inferior, green.
- Corolla 5, polypetalous, obovate, sinous upper margin, mucilaginous,twisted,inferior, red.
- Androecium many, monoadelphous, epipetalous, antisepalous.
- Gynoecium pentacarpellary, syncarpous, superior, style united below and free at its tips, stigma 5, capitate, velvety red.
- Odor fragrant
- Taste mucilaginous.[2]

Powder microscopic characters of flower

- Powder – Purplish red.
- Powder shows cluster crystals of calcium oxalate
- Large, spinuous and yellow pollen grains;
- Glandular, multicellular trichomes, as well as covering stellate type trichmoes;
- Fragments of calyx tissue bearing anomocytic stomata and stellate and glandular trichomes;
- Spiral vessel and cluster crystals and fragments of overy with stellate trichomes,
- Fragments of style with stomata, trichomes and cells with red contents, fragment of another with pollen grains,
- Fragments of hairy stigma with reddish pigments, spinuous walls and trichomes;
- Fragments of corolla tissues.[2]

Phytochemicals

Phytochemicals	**Results**
Phytosterols	Positive
Alkaloids	Positive
Carbohydrates	Positive
Proteins	Positive
Terpenoids	Negative
Saponins	Positive
Tannins	Positive
Carotenoids	Negative
Steroids	Positive
Glycosides	Positive
Phenols	Positive

Flavonoids	Positive[3,4]

Pharmacological activities of *hibiscus rosa-sinesis* flower

Anti-bacterial activities

Agarwal et al study revealed that the hexane extract of *Hibiscus rosa sinensis* flower with the dosage of 500mg and 1mg/ 1ml shows antimicrobial activity against Bacillus subtillis and E.colli bacterias.[5]

Shobey and Tiwari.u et al studies revealed that the hexane extract of *Hibiscus rosa sinensis* flower with the dosage of 500mg and 1mg/ 1ml shows antimicrobial activity against E.colli, S.aureus, S. Pyogenes bacterias.[6,7]

Ruben.P et al study revealed that the Aqueous extract of *Hibiscus rosa sinensis* flower with the dosage of 500mg and 1mg/ 1ml shows antimicrobial activity against E.colli, Bacillus subtillis bacterias.[8]

Ruben. P et al study also revealed that the ethanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 500mg and 1mg/ 1ml shows antimicrobial activity against salmonella sp. And P. aeuriginosa.[8]

Anti-oxidant activity

Ghosh A et al study revealed that the 95 % ethanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 50µg/mg shows Anti-oxidant activity against Hydrogen peroxide free radicals.[10]

Khan ZA et al study revealed that the 80 % ethanolic and 80 % methanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 50µg /mg shows Anti-oxidant activity against DPPH free radicals.[11]

Johnson S et al study revealed that the aqueous extract of *Hibiscus rosa sinensis* flower with the dosage of 1 mg/ml shows Anti-oxidant activity against DPPH free radicals.[12]

Anti-diabetic activity

Afiune LAF et al study revealed that the Ethanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 500mg/kg shows Anti-diabetic activity on Alloxan induced diabetes in hyperlipidemic Wister rats and rabbits.[15]

Pethe M et al study revealed that the Ethanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 50, 100 and 200mg /kg shows Anti-diabetic activity on Alloxan induced diabetes in hyperlipidemic albino rabbits.[16]

Sharma K et al study revealed that the *Hibiscus rosa sinensis* flower powder shows Anti diabetic activity in clinical trial on Type II diabetes mellitus patients aged 30-60 years.[17]

Anti- fertillity action

Salib JY et al study revealed that the Methanolic extract of *Hibiscus rosa sinensis* flower with the dosage of 100 mg /ml shows Anti- fertillity action in vitro Alkaline phosphatase inhibitory activity.[18]

Jana TK et al study revealed that the aqueous extract of *Hibiscus rosa sinensis* flower with the dosage of 100mg /ml shows Anti- fertillity action in spermatogenesis in male albino rats.[19]

Hadimur K et al study revealed that the propelyne glycol mixed *Hibiscus rosa sinensis* flower powder shows Anti- fertillity action by the inhibition of implants in pregnant albino wistar rats.[20]

Kumari M S et al study revealed that the propelyne glycol mixed *Hibiscus rosa sinensis* flower powder shows Anti- fertillity action by preventing blastocyst implantation in pregnant female albino wistar rats.[21]

Cardio protective activity

Imafidon KE et al study revealed that the *Hibiscus rosa sinensis* flower with the dose of 360µg/ ml shows cardio protective activity on in vitro langend off- perfused hearts of wistar rats.[27]

Pavithraa.P & Kannan.E study reveals that rats were pretreated with *Hibiscus Rosa Sinensis* sharbath p. o for 21 days), Quercetin (50mg/kg) triturated in 1% Sodium Car boxy Methyl Cellulose and given through oral gavage for 21 days. Isoproterenol (85mg/kg) was mixed in normal saline and given by i. p. on 20th and 21st day shows *cardio protective effect of hibiscus rosa sinensis sharbath on myocardial ischemic rats.*[30]

Immune modulatory activity

Mishra N et al study revealed that the Aqueous extract of *Hibiscus rosa sinensis* flower with the dose of 500 mg/ kg shows good humoral immune response on male Swiss albino mice.[25]

Desai SK et al study revealed that the Ethyl acetate extract of *Hibiscus rosa sinensis* flower with the dose of 100mg/kg shows immune modulatory activity on albino wistar rats.[26]

Other activities

Anti- fungal activity

Nilima W et al study revealed that the 50 % ethanolic extract of *Hibiscus rosa sinensis* flower shows Antifungal activity against Aspergillus terreus and Aspergillus oryzae fungus.[9]

Anti-cancer activity

Durga et al study revealed that the acetone extract of *Hibiscus rosa sinensis* flower with the dosage of 1000 µg /mg shows Anti-cancer activity on HeLa cell lines.[13]

Arullappan S et al study revealed that the aqueous extract of *Hibiscus rosa sinensis* flower with the dosage of 2 mg /ml shows Anti-cancer activity on B16F10 melanoma cell lines.[14]

Hair growth promoting activity

Agarwal KK et al study revealed that the aqueous extract of *Hibiscus rosa sinensis* flower with the dose of 1 % shows Hair growth promoting activity.[22]

Wound healing activity

Nayak BS et al study revealed that the Ethanolic extract of *Hibiscus rosa sinensis* flower with the dose of 120 mg/ kg shows wound healing activity on Spargue Dewley rats.[23]

Anti-inflammatory activity

Radnan SZ et al study revealed that the Ethanol extract of *Hibiscus rosa sinensis* flower with the dose of 100 mg/ kg shows Anti-inflammatory activity in carrageenan induced paw odema of Spargue Dewley rats.[24]

Gastro protective activity

Kumar PK et al study revealed that the Aqueous extract of *Hibiscus rosa sinensis* flower with the dose of 500 mg/ kg shows Gastro protective activity on Albino Wistar rats.[28]

Anti hyperlipidemic activity

Sikarwar et al study revealed that the ethanolic extract of *Hibiscus rosa sinensis* flower with the dose of 500 mg/ kg shows Antihyperlipidemic activity on Triton and atherogenic diet induced hyperlipidemia in Albino Wistar rats.[29]

Phytochemicals and Its pharmacological activity.

S. no	Pharmacological actions	Phytochemicals responsible for pharmacological activites
1	Anti-bacterial activity	Carbohydrates, phytosterols, proteins, alkaloids and saponins[6]
2.	Antioxidant activity	Alkaloids, tannins, steroids, glycosides, phenols and flavonoids[11]
3.	Anti-cancer activity	Flavonoids, tannins, and saponins[13]
4.	Immune response activity	Alkaloid and flavonoids[25]
5.	Gastro protective activity	Tannins and flavonoids[28]

CONCLUSION

Hibiscus rosa Sinensis red variety cultivated as an ornamental plant in south India region. Due to lack of scientific studies and reviews *Hibiscus rosa Sinensis flower* is used as ornamental flower but this review article revealed that The phytochemical review shows that *Hibiscus rosa Sinensis* flowers having rich in essential phytochemicals and the pharmacological review shows that efficacy of the flower in the health system to prevent communicable and non-communicable diseases and the potency of this flower used in the treatment of large number of diseases. Finally we conclude Scientific studies and reviews are proved that its having the lots of phytochemicals and essential medicinal properties.

REFERENCE

1. Anil Kumar and Ashatha Singh, Review on Hibiscus rosa sinensis, International Journal of Research in Pharmaceutical and Biomedical Sciences, www.ijrpbsonline.com, 2012; 3 (2): 2229-3701.
2. V. M. Jadhav, R. M. Thorat, V.J. Kadam & N. S. Sathe., Hibiscus rosa sinensis Linn – ‘‘Rudrapuspa’’: A Review, ISSN: 0974-6943 ,Journal of Pharmacy Research, 2009; 2(7): 1168-1173.
3. Asmaa Missoum., An update review on Hibiscus rosa sinensis phytochemistry and medicinal uses, ISSN: 2454-5023, Journal of Ayurvedic and Herbal Medicine, 2018; 4(3): 135-146.
4. Pekamwar S. S.*, Kalyankar T.M., Jadhav A.C., Hibiscus rosa-sinensis: A Review on ornamental plant, ISSN 2278 – 4357, World Journal of Pharmacy and Pharmaceutical Sciences, 2(6): 4719-4727.

5. Agarwal S, Prakash R. Evaluation of antibacterial activity of Hibiscus rosa-sinensis flower extract against E. coli and B. subtillis. Biological Forum – An International Journal, 2014; 6(2): 194–196.
6. Tiwari U, Yadav P, Nigam D. Study on phytochemical screening and antibacterial potential of methanolic flower and leaf extracts of Hibiscus rosa sinensis . International Journal of Innovative and Applied Research, 2015; 3(6): 9–14.
7. Sobhy EA, Abd Elaleem KG, Abd Elaleem HG. Potential antibacterial activity of Hibiscus rosa sinensis linn flowers extracts. International Journal of Current Microbiology and Applied Sciences, 2017; 6(4): 1066–1072.
8. Ruban P, Gajalakshmi K. In vitro antibacterial activity of Hibiscus rosa-sinensis flower extract against human pathogens. Asian Pacific Journal of Tropical Biomedicine, 2012; 2(5): 399–403.
9. Nilima W, Deepavali S. Antifungal activity of selected plant extracts against important seed borne fungi of maize. International Journal of Pharma and Bio Sciences, 2013; 4(3): 163–170.
10. Ghosh A, Dutta A. GC-MS analysis and study of potential antioxidant activity of the crude ethanolic flower extract of Hibiscus rosa sinensis L (wild variety) by hydrogen peroxide scavenging assay. International Journal of Current Trends in Science and Technology, 2017; 7(11): 20405–20410.
11. Khan ZA, Naqvi SAR, Mukhta A, Hussain Z, Shahzad SA. Antioxidant and antibacterial activities of Hibiscus rosa-sinensis Linn flower extracts. Pakistan Journal of Pharmaceutical Sciences, 2014; 27(3): 469–474.
12. Johnson S, Abdul Razack S, Sellaperumal P, Ramakrishnan G, Jayakrishnan P. Antioxidant activity of iron isolated from petals of Hibiscus rosa sinensis . EC Microbiology, 2017; 7(1): 14–20.
13. Durga R, Kumar PS, Hameed SAS, Dheeba B, Saravanan R. Evaluation of in-vitro anticancer activity of Hibiscus rosa sinensis against hela cell line. Journal of Global Pharma Technology, 2018; 10(1): 1–10.
14. Goldberg KH, Yin AC, Mupparapu A, Retzbach EP, Retzbach EP, Goldberg GS, et al. Components in aqueous Hibiscus rosa-sinensis flower extract inhibit in vitro melanoma cell growth. Journal of Traditional and Complementary Medicine, 2017; 7(1): 45–49.
15. Afiune LAF, Leal-Silva T, Sinzato YK, Moraes-Souza RQ, Soares TS, Campos KE, et al. Beneficial effects of Hibiscus rosa-sinensis L. flower aqueous extract in pregnant rats with diabetes. PLoS One, 2017; 12(6): 1–13.

16. Pethe M, Yelwatkar S, Gujar V, Varma S, Manchalwar S. Antidiabetic, hypolipidimic and antioxidant activities of Hibiscus rosa sinensis flower extract in alloxan induced diabetes in rabbits. International Journal of Biomedical and Advance Research., 2017; 8(4): 138–143.
17. Sharma K, Pareek A, Chauhan ES. Evaluation of hyperglycemic and hyperlipidemic mitigating impact of Hibiscus rosa sinensis (gudhal) flower in type ii diabetes mellitus subjects. International Journal of Applied Biology and Pharmaceutical Technology, 2016; 7(2): 223–228.
18. Salib JY, Daniel EN, Hifnawy MS, Azzam SM, Shaheed IB, Abdel-Latif SM. Polyphenolic compounds from flowers of Hibiscus rosa-sinensis linn. And their inhibitory effect on alkaline phosphatase enzyme activity in vitro. Zeitschrift für Naturforschung Journal of Biosciences, 2014; 66(9-10): 453–459.
19. Jana TK, Ray DS, Mandal D, Giri JS, Bhattacharya J. Study of the effects of Hibiscus-rosa-sinensis flower extract on the spermatogenesis of male albino rats. Journal of Physiology and Pharmacology Advances, 2013; 3 (6): 168–171.
20. Hadimur K, Sarashetti RS, Lone ND, Kanthi VG, Patil N. Anti implantation and pregnancy interruption activity of japakusuma (Hibiscus rosa sinensis) in albino rats. International Journal of Research in Ayurveda and Pharmacy, 2013; 4(3): 387–389.
21. Kumari M S, Kadam S, Mundugaru R, Bhat S. Anti fertility activity of japakusumadi yoga in female wistar albino rats. International Ayurvedic Medical Journal, 2018; 2(2): 928–933.
22. Agrawal KK, Singh K. Hair growth activity of aqueous extract of Hibiscus rosa-sinensis l. flowers. Indian Journal of Drugs, 2017; 5(4): 142–149.
23. Nayak BS, Raju SS, Orette FA, Rao AVC. Effects of Hibiscus rosa sinensis l (malvaceae) on wound healing activity: a preclinical study in a sprague dawley rat. The International Journal of Lower Extremity Wounds, 2007; 6(2): 76–81.
24. Raduan SZ, Abdul Aziz MWH, Roslida AH, Zakaria ZA, Zuraini A, Hakim MN. Anti-inflammatory effects of Hibiscus rosa-sinensis l. and Hibiscus rosa-sinensis var. Alba ethanol extracts. International Journal of Pharmacy and Pharmaceutical Sciences, 2013; 5(4): 754–762.
25. Mishra N, Tandon VL, Gupta R. Immunomodulation by Hibiscus rosa-sinensis : effect on the humoral and cellular immune response of Mus musculus. Pakistan Journal of Biological Sciences, 2012; 15(6): 277–283.

26. Desai SK, Mulgaonkar SS, Pandey CH. Comparative study of immunomodulatory and adaptogenic activity of Hibiscus rosa sinensis extracts in rats. International Journal of Pharmacy and Pharmaceutical Sciences, 2013; 5(2): 101–103.
27. Imafidon KE, Okunrobo LO. The effects of aqueous extracts of the leaves of Hibiscus rosa-sinensis Linn. on renal function in hypertensive rats . African Journal of Biochemistry Research, 2010; 4(2): 43–46.
28. Kumar PK, Annapurna A, Ramya G, Sheba D, Krishna G, Sudeepthi L. Gastroprotective effect of flower extracts of Hibiscus rosa sinensis against acute gastric lesion models in rodents. Journal of Pharmacognosy and Phytochemistry, 2014; 3(3): 137–145.
29. Sikarwar MS, Patil MB. Antihyperlipidemic activity of Hibiscus rosa sinensis Linn. ethanolic extract fractions. International Journal of Health & Allied Sciences, 2015; 4(2): 73–78.
30. Pavithraa. P, Kannan. E,Invitro Analysis of Hibiscus Rosa Sinensis and Impact of Its Sharbath on Myocardial Ischemia of Rats. Asian Journals of Multidimensional Research, 2018; 7(2): 178-183. ISSN: 2278-4853.