



A REVIEW ON DIFFERENT BIOLOGICAL EFFECTS OF BANAFSHA (*VIOLA ODORATA*)

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ABSTRACT:

Banafsha is having more acceptability and compatibility with the human body. *Viola odorata* (Banafsha) is an important herb of Unani medicine. The present study shows idea about biological effects and uses of *Viola odorata* (Banafsha). Study shows that *Viola odorata* can be used for laxative, antipyretic and other actions. Due to its multiple therapeutic actions, Banafsha is used in different disease and disorders in human being. The plant is known to treat different systemic ailments due to the presence of phenolic compounds, triterpenes, sterols, resins, tannins, volatile oil, glycosides, flavonoids, saponins and anthocyanins. In Unani System of Medicine, the Banafsha is used in hypertension, depression, chronic insomnia, Dry cough, and as Demulcent, Laxative & Purgative etc. Different studies show *Viola odorata* as antihypertensive drug was tested on Guinea pig atria and rat aorta, and it was found effective. It was also found effective in depression as tested on mice; molecular docking results depict that compounds 1-3 can interact with 5HT₃, 5HT_{1A} and 5HT_{2A} receptors, and are more specific to the 5HT₃ receptor subtype. The findings of this study clearly suggest that compounds 1-3 possess antidepressant-like effects which might be mediated via the serotonergic system. The *Viola odorata* produce sleep in insomniac patients. They conducted study as an experimental pretest-posttest evaluation on VO efficacy in 50 patients with chronic insomnia in Iranian Traditional Medicine Clinic of Mashhad University of Medical Sciences, Mashhad, Iran. The result shows the improvement in the sleeping and ISI index of the patients ($p < 0.05$). Many pharmacological activity mentioned in Unani medicine is validated and many activity needs further exploration owing to immense therapeutic scope in this drug.

KEYWORDS:

BANAFSHA, BIOLOGICAL EFFECTS, VIOLA ODORATA LINN, UNANI SYSTEM OF MEDICINE.

1. INTRODUCTION

The worldwide demand of herbal medicines has increased in last few decades. Now a days, modern medicines uses different plant derived compounds (herbal medicines) as a basis for pharmaceutical drugs. Herbal medicines are also called as phytotherapy and phytomedicines. As per WHO, modern drugs in America contains 25% of herbs. Current Studies shows that more than 60% of world's population relies on Herbal medicines. Herbal Medicines are having important role in treatment of diseases and disorders from last several centuries. As per WHO, More than three quarter of African and asian population uses Herbal medicines turnover worth 60 million USD. In modern Pharmacopoeia, about seven thousands compounds are derived from plant. Currently 120 compounds derived

from plant are used in modern medicines. More than 80% of these drugs show same effect as observed from traditional plant derived substance. It is more beneficial to use herbal remedies in Diabetes, severe renal diseases (disease related to kidney), Cancer, Asthama and some skin infections. Herbal remedies are also applied and effective in European countries. In Germany, apothecaries dispense herbal drugs. Extract of herbal drugs, essential oils and herbal teas are also prescribed in Germany and other European countries. Herbal remedies are more popular in India, as Indian Government has constituted separate body i.e AYUSH (Ayurvedic, Yoga and Naturopathy, Unani, Siddha and Homeopathy). Standardization of herbal drugs is also carried out to

determine the quality and quantity of herbal medicines. Standardization can be carried out by chromatographic techniques mainly thin layer chromatography and other techniques are also used to identify and quantify the herbal medicines. One of the important herbal medicines obtained from herbs is Banafsha plant. Banafsha is used as Unani and ayurvedic medicine since several years. It has number of pharmacological applications. The Banafsha is used in three varieties. Firstly herb i.e. flower, stem and leaves, secondly as dried flower i.e. Gul e Banafsha and third one is dried aerial part without flower i.e. Berg e Banafsha. The flower and other part of the plant are used as drug. [1-5]

OBJECTIVE:

The aim of current study is to explore the existing data about biological effects of Banafsha and uses especially in Unani System of Medicine.

Botanical Name: *Viola odorata* Linn.

Family: Violaceae

Regional Names:

English: Garden violet, Wood violet, Sweet violet, Common violet,

Urdu/ Hindi: Banafsha, Vanafsha, Banafsa, Banaphsa.

Arabic: Banafsaj, Farfeer

Persian: Kokash

Marathi: Bagabanosa,

Tamil: Vayilethe, vayilettu, ratna purus, Ratnapurucu,

Sanskrit: Banafsha, Banapsa, Vanaphsa, Vanspika. [6-10]

DESCRIPTION:

The *Viola odorata* (Gul-e-Banafsha) contains a violet color flower. It is branched, knotted, short, and leaf-stalk and stipules. The branches are very thin, they arise from single root. Each branch contains one flower. Blue and sky blue flowers are common in this species. The flower can be white yellow or pinkish in color. The Kashmiri banafsha plant contains small size flowers. The whole plant i.e. flower, branches and leaves are used as drug. The flower contains sweet and attractive scent which is used in different cosmetic preparations like Perfumes, fragrances and spray. The plant grows from surface having height of half or one hand. The root is thick, knotty and dry. [11-12]

MIZAJ (TEMPERAMENT): According to holistic Unani concept the basic nature or temperament of this drug is Barid (cold) in first stage and Ratb (moist) in second stage. The pharmacological actions depend on this fundamental nature of plant.

USES: It is used in hot cough (sual harr), pharyngitis (suzish wa waram-i-halaq), catarrh (zukam), coryza (nazla), diphtheria (khunaq), irritation of urinary bladder (suzish-i mathana), pleurisy (dhat al-janb), eczema (nar-i-farsi), ailments of infants (amrad-i- itfal), headache due to excessive heat (suda-harr), bilious diarrhoea (ishal-i safrawi). It is helpful in heartburn, reduces blood pressure,

also helpful in headache, dry cough, conjunctivitis. It is used in the form of Decoction and infusion to treat cold, runny nose and cough. Almond oil and fresh flower of Banafsha in combination is used to treat constipation and cold. According to renowned Unani Pharmacologist, Ibne Betar, Banafsha induces sleep moderately. It reduces excess heat and dryness of all the body organs. Nilofar, Gaozaban and Aslussus may be considered as its alternative in these functions. (13)

ADVERSE EFFECTS: Although commonly adverse effects are not observed clinically but following are mentioned old literature: Nausea, indigestion, Vomiting, palpitation, weakens the appetite, restlessness. (13)

2. REPORTED PHARMACOLOGICAL/BIOLOGICAL ACTIVITIES:

LAXATIVE ACTIVITY: The laxative activity of different extracts has been studied, and the alcoholic extract of plant shows laxative effect upto 200 mg/kg body weight. While, aqueous extract at a dose level of 400 mg/kg shows the laxative effect significantly. (01-02)

ANTIPIRETIC ACTIVITY: *Viola odorata* produced a significant oral antipyretic activity in rabbits using chloroform, hexane, and water-soluble extracts. Antipyretic activity was more prominent in the hexane-soluble portions of these plants.

ANTIHYPERTENSIVE ACTIVITY: Ali H Eid et al studied about *Viola odorata* as anti-hypertensive drug. The drug was tested on guinea pig atria and rat aorta. The drug was administered in a dose of 0.39mg/ml and 0.40 mg/ml. It observes the increase in the nitric oxide level (NO) which causes vasodilatation hence producing antihypertensive effect (15). Duke et al studied about antihypertensive activity of *Viola odorata* and *viola tricolor*. (16)

Kandpal Asheesh et al studied about Vasodilatation effect of the *Viola* plant extract. It is mediated through multiple pathways like inhibition of Ca⁺⁺ influx via membranous Ca⁺⁺ channels, its release from intracellular stores and Nitric Oxide-mediated pathways, which possibly explain the fall in Blood Pressure. The plant also showed antidiabetic effect and reduction in body weight which may be due to the inhibition of synthesis and absorption of lipids and antioxidant activities. Thus, this study provides a pharmacologic rationale to the medicinal use of *Viola odorata* in hypertension and dyslipidemia. (18)

Khalid Hussain Janbaz et al performed experiment on Rabbit aorta. The drug exert relaxant effect on phenylephrine (1 μM)- and K⁺ (80 mM)-induced contractions in isolated rabbit aortic preparations. The *V. odorata* crude extract on application to isolated rabbit aortic preparation, exerted relaxant effect on phenylephrine (1 μM)-induced contractions in isolated rabbit aortic preparations up to the extent of 5 mg/mL tissue bath concentrations with EC₅₀ values of 5.37 mg/mL (95% CI: 3.97-6.65 mg/mL; n=5), whereas K⁺ (80 mM)-induced contractions in isolated rabbit aorta were

relaxed at lower tissue bath concentrations with EC50 values of 1.5 mg/mL (95% CI: 0.34-6.66 mg/mL; n=5). The standard Ca²⁺ channel blocker (verapamil), relaxed the phenylephrine (1 μM) and K⁺ (80 mM)-induced contractions with respective EC50 of 1.08 mg/mL (95% CI: 0.08-2.52; n=5) and 0.55 mg/mL (95%CI: 0.04-2.10; n=5). Thus, the drug providing rationale for its folkloric uses to treat hypertension. (19)

MOSQUITOES REPELLENT ACTIVITY: The oils violet (*Viola odorata*) induce a protection time of 8 hours at the maximum and a 100% repellency against *Anopheles*, *Aedes*, and *Culex* mosquitoes.

ANTIDEPRESSANT ACTIVITY: Nasiara karim et al studied about Antidepressant potential of novel flavonoids derivatives from sweet violet (*Viola odorata* L). The *Viola odorata* has been used in the treatment of neuropsychiatric disorder. The present study was performed to isolate phyto constituents including three flavonoids 5,7,4'-trihydroxy-3',5'-dimethoxyflavone, 5,7-Dihydroxy-3,6-dimethoxyflavone and 5,7,4'-trihydroxy-3'-methoxyflavone from the whole plant of *Viola odorata* Linn and to investigate the antidepressant-like effects of these compounds and their possible mechanism of action using antagonists of the dopaminergic, serotonergic and adrenergic system.

Bakhshaei S. et al. studied about *Viola odorata* (Sweet violet) is an herbal plant from the Violaceae family. It is native to Asia and Europe and also introduced to North America and Australia. In traditional Iranian folk medicine it has been used to treat depression respiratory ailments, congestion, sore throat, insomnia, anxiety blood pressure as well as coughs. Sweet violet contains glycoside, mucilage, methyl salicylate as well as alkaloid. Based on recent studies, the main compounds in the Violet's leaves are glycoside of salicylic acid that has been used for to treat body pains and headaches. Also, Violet's flower has been used as an antidepressant, anti-insomnia laxative, lipid-lowering, anti-inflammatory, blood pressure lowering and anti-septic treatment. (21)

IN CHRONIC INSOMNIA:

Farhad Jafari et al studied about use of traditional medicines in chronic insomnia. The *Viola odorata* produce sleep in insomniac patients. They conducted study as an experimental pretest-posttest evaluation on VO efficacy in 50 patients with chronic insomnia in Iranian Traditional Medicine Clinic of Mashhad University of Medical Sciences, Mashhad, Iran. The Intranasal drop of *Viola odorata* (Violet Oil) was used in insomnia. Two drops of Violet oil (66 mg) were administered in nostril before sleeping for one month. All patients are completing the questionnaire on Insomnia severity Index (ISI) before and after the completion of experiment. The result shows the improvement in the sleeping and ISI index of the patients (p< 0.05). Some patients observed mild complications on administration of VO drops. No any serious case was observed. Hence, study shows that the VO drop is safe, acceptable and effective drug in chronic insomnia. (22)

Hamed et al studied about herbal medicinal oil. In Iran, conventional production methods of herbal oils are widely used by local practitioners. Administration of oils is rooted in traditional knowledge with a history of more than 3000 years. Scientific evaluation of these historical documents can be valuable for finding new potential use in current medicine. *Viola odorata* oils are used for patients having chronic insomnia. Different testing on insomniac patients shows effective result. (23, 24)

ANTI-INFLAMMATORY ACTIVITY: An aqueous extract of *Viola odorata* shows anti-inflammatory properties as compared with hydrocortisone. *Viola odorata* extract given prophylactically was partially effective in preventing lung damage, equal to the effect of hydrocortisone to aid the resolution of formalin-induced lung damage. (02)

3. CONCLUSION

The present study shows idea about biological effects and uses of *Viola odorata* (Banafsha). Study shows that *Viola odorata* can be used for laxative, antipyretic and other actions. *Viola odorata* as antihypertensive drug was tested on rat aorta and Guinea pig atria, and it was found effective. It was also found effective in depression as tested on mice; molecular docking results depict that compounds 1-3 can interact with 5HT₃, 5HT_{1A} and 5HT_{2A} receptors, and are more specific to the 5HT₃ receptor subtype. The findings of this study clearly suggest that compounds 1-3 possess antidepressant-like effects which might be mediated via the serotonergic system. The *Viola odorata* produce sleep in insomniac patients. They conducted study as an experimental pretest-posttest evaluation on VO efficacy in 50 patients with chronic insomnia in Iranian Traditional Medicine Clinic of Mashhad University of Medical Sciences, Mashhad, Iran. All patients are completing the questionnaire on Insomnia severity Index (ISI) before and after the completion of experiment. The result shows the improvement in the sleeping and ISI index of the patients (p< 0.05). Hence, study shows that the VO drop is safe, acceptable and effective drug in chronic insomnia. *Viola odorata* can also be used for anti-inflammatory action. Therefore, study shows *Viola odorata* (Banafsha) can be used for different pharmacological actions.

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