

## Gul-E-Surkh (*Rosa Damascena* Mill.): A Comprehensive Review of Phytochemical And Pharmacological Profile.

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### ABSTRACT

Gul-e-Surkh is the flower of the plant *Rosa damascena* Mill which is one of the most important plants of Rosaceae family. It is a holy ancient plant with long historical uses in Iranian traditional medicine. The Iranian people called it, Gol-E-Mohammadi (the flower of Prophet "Mohammad"). It has been used in Unani Medicine (Tibb-e-Unani) since ancient era. This plant is cultivated all over the world because of its beauty and fragrance along with its therapeutic effect. The anti-diabetic, anti-inflammatory, antimicrobial, antioxidant, analgesic, and anti-depressant, anti-aging effect and hypotensive properties of *R. damascena* have been confirmed; and its traditional claim proven after contemporary research. This plant is used treat a variety of diseases especially in amraj kabid (liver disease), Nafs-ud-dam (epistaxis), khafqan (palpitation), khafqan harra (har palpitation), ashobe chashm (conjunctivitis), ghashi (syncope), qulah (stomatitis), dard sar (headach). The present article reviews the summary of recent knowledge of significant traditional uses, phytochemical, and pharmacological activities of the plant *Rosa damascena* Mill.

**Key words:** *Rosa Damascena*, Dafe Dhayabitus (Anti-diabetic), Muqawwi Qalb

### I. INTRODUCTION

Gul-e-Surkh is equated with flowers of *Rosa damascena* Mill. in Unani system of medicine and belongs to family Rosaceae.[1,2] Rosaceae family has more than 130 species, but only a few species are scented.[3] The damask rose is most important of all perfuming roses.[4] According to their flowering habit, Hurst (199) classified Damask roses into two types, summer Damask that blooms only in early summer and autumn Damask that blooms during the autumn.[3] In Arabic and Persian literature the flowers has been mentioned under the name of red wild rose, red garden rose,

white wild rose etc.[1,2,5] The damask rose is believed to have been introduced from middle eastern region into European countries by the returning crusaders. Flower of damask rose are very fragrant and contain Large amount of volatile oil called Otto of rose.[4] *Rosa damascena* is used as confectionery, beverages, liquors, drugs, flavouring foods, and perfumery.[6] It has application in pharmacology such as antidiabetic activities, antibacterial, antioxidant, anti-HIV, hypnotic, and relaxant effect on acheal chains.[3]

### Scientific Classification [7]

Kingdom	:	Plante
Subkingdom	:	Viridiaeplantae
Division	:	Tracheophyta
Subdivision	:	Spsrmatophytina
Class	:	Magnoliopsida
Order	:	Rosales
Family	:	Rosaceae
Genus	:	<i>Rosa</i>
Species	:	<i>damascena</i>

### II. HABITAT AND DISTRIBUTION

*Rosa damascena* is a temperate plant and considered to be a native of Asia Miner.[2,6] This plant is cultivated in all over the world including Bulgaria, Turkey, Iran, Europe, and India.[8] Widely grown in gardens throughout India.[1] Several species and forms are cultivated in India, *Rosa damascena* with its red double flowers is the most important and it is cultivated in rose gardens in several places in Bengal, Kashmir, Punjab and chiefly near Patna, Ghazipur and Lahore. [9] Flowers are preferably harvested in early morning before sunrise by hand. The life span of *Rosa damascena* is up to 5 years and economic period is about 25 year.[8]

### Vernacular Names

Arabic :Ward-e-Ahmar [1,10]

Persian :Gul-e-surkh [1,10]

Unani :Gul-e-Surkh,Vard, Vard-e-Ahmar [11]  
 Bangali :Golap phul [12,13]  
 English :Damask Rose [6,13]  
 Gujarati :Gulal-akali [1,14]  
 Hindi :Bussorah, Falsi Gulab, Gulab [1,15]  
 Tamil :Irosa , Guluppu [1,8,11]  
 Telugu :Gulabi, pannier, roja[1,2]  
 Urdu :Gulab, Ward [2]  
 Marathi :Gule-akali [1]  
 Sanskrit :Satapatri, Atimajula, Lakshapushpa.[9,6]  
 Ayurvedic:Taruni [11]  
 Afganistan:Gul, Gulab [16]  
 French :Rose de Damas , Rosier purgative [16]  
 Russian :Rosa Kazanlikskaya [16]  
 Spanish :Rosal de Alejandria, Rosal de Domasco [16]

### III. BOTANICAL DISCRPTION

Rosa damascena mill. is a perennial erect shrub up to 2 meter height, an erect shrub, Branches long, arching, with large hooked prickles. [1,4]

**Leaves:** Leaves are compound, serrated, alternate, pinnate, leaflets 3-7 in number with rachis covered with pringles, Petioles prickly. [1,4]

**Flowers:** Many in a corymb, double, red, pink, or white, born on glandular-hispid and prickly pedicels, sweet-scented. [1,13]

**Fruit:** Ovoid or obovate, pulpy, bristly, and bright red. [1,13]

**Inflorescence:** Raceme with pink coloured flowers. [17]

### MAHIYAT (UNANI MORPHOLOGY)

Rose plant is a famous and smelleous plant; its flower is used as medicine. On the basis of colour it may be of much variety. [18] According to Ishaq Bin Umar it is of two types, red and white. Its type is Zardi. [19] Flower is of two kind; Bustani and Jangly. Jangly flower has less number of petals and least odour than that of Bustani. [10] According to Abou Hunafa its types are Pahadi and Sahrai. [19] Flower of Sahrai is looks like flower of Zaitoon.[10] In Iraq black rose is also found. Dry rose flowers are more qabiz (astringent) then fresh flowers.[19]



Gule Surkh (Rosa Damascena Mill.) (Flowers)

### Mizaj (Temperament)

Sard (Cold) 1<sup>0</sup> and Khushk (Dry) 2<sup>0</sup> [10,20]  
 Murakkabul Quwa [10,18]

### HASASE MUSTAMELA (PARTS USED)

Flowers, [1,13] Flower buds,[21]  
 Petals,[2,22] Stamens.[22]

### IV. AFA´AL (FUNCTIONS) AS PER UNANI LITERATURE

**Flowers:** Laxative (in fresh form),[10,23] habis (styptic),[24,25] qabiz(in dry form) (astringent),[10,18] mufatteh,[26] muqauwwi aazae ra'eesa (vital organ tonic),[1] muqawwi badan (body tonic),[1] muqauwwi meda (gastric tonic),[1] muqauwwi jigar (liver tonic),[18] mukauwwi aaza,[19] muqawwi reham (uterine tonic),[1] muhallil warm (resolvent),[10] musakkin-i-alam (intestinal tonic), daf-e-taffun (antiseptic),[1] Resolvent.[2]

**Zare-ward (Stamens/Anthers):** Habis (styptic),[24] qabiz (astringent),[10]

**Arqe Gulab:** Musakkin, mufarreh (exhilarant),[25] mukauwwi aaza,[19] mukauwwi qalb (heart tonic), mukauwwi dimagh (brain tonic),[18] laxative.[10]

### V. ESTEMAL (USES) AS PER UNANI LITERATURE

**Flowers:** Nafs-ud-dam (epistaxis),[18] khafqan (palpitation),[10] khafqan harra (har palpitation),[1] ashobe chashm (conjunctivitis),[1,19] ghashi (syncope),[26] qulah (stomatitis),[1] dard chasm (eye pain),[19] waj-ul-uzn,[1] dard sar (headach),[18] amraj kavid (liver disease),[27] use of arqe gulab with shakar beneficial in hummae hadda, thirst and iltehabe

hadda , it is useful when use as gargle of boiled mixture of flowers and honey,[19] amraz halaq (throat disease), past of flowers are useful in damah (asthma) when used with sharbate banafsha or sharbate zoofa,[27] sailan ur raham (leucorrhoea),[10] decoction of flower helps in early healing and removal of scars in measles, decoction of flower used in prolapse rectum,[10] Hepatitis, endocarditis, metritis.[2]

**Arqe Gulab:** Khafqan, ramad (conjunctivitis),[25] dard meda, dard ama (intestinal pain), dard jigar (hepatic pain),[10] ghashi (syncope),[26] khafqan (palpitation), bawaseer (piles),[10] ashobe chashm (conjunctivitis),[26] badhazmi (indigestion),[23] ear pain.[18]

## VI. AFA'AL (FUNCTIONS) AS PER OTHER LITERATURE

**Flowers:** Antipyretic,[16] laxative (in fresh form),[13] astringent,[12,13,17] cardiac tonic,[11] expectorant,[16] aperients,[11] antipyretic,[16] cardiotoxic,[21] anti-inflammatory,[16] carminative,[28] digestive, emollient, rejuvenating, tonic, aphrodisiac,[17] improves appetite, intestinal affection.[16]

**Buds:** Anticephalalgic,[17] astringent,[16,17] laxative (fresh), expectorant,[11,21] aperients, cardiac tonic,[4,12] removing bile and cold humour.[12,16]

**Stamens/Anthers:** Astringent.[4,11]

**Arqe Gulab:** Cooling, refrigerant, anti-inflammatory, daf-e-taffun(antiseptic),[11,17] antiseptic.[11]

Rose Otto/Essential oil: Antiseptic, antibacterial,[17] flavouring agent, emollient.[22]

## VII. ESTEHMAL (USES) AS PER OTHER LITERATURE

**Flowers:** Flowers used for preparation of otto (attar) and rose water,[9] asthma, bronchitis, cardiac debility, colic, cough, dyspepsia, flatulence, inflammation, xskin disease, wound healing, gargle is helpful in mouth ulcer bleeding gum and toothache,[17] enlarged tonsil,[11,15] toothache, headach, excessive perspiration, leprosy, biliousness, Stomatitis, burning sensation,[16] chronic fever.[16,17]

**Flower Buds:** Asthma, bronchitis, cough.[17]

**Arqe Gulab:** Helitosis,[17,22] hyperhidrosis, acne,[17] skin irritation sore eyes.[11]

**Rose Otto:** Biliary calculus.[17]

**Leaf paste:** Head injury, eye swelling, liver disorder, piles.[17]

## MAZARRAT (TOXICITY)

Causes Coryza,[24] For Bah,[18] Increases thirst.[25,29]

## MUSLEH (CORRECTIVES)

Aneesoon (Pimpinella anisum), Habbul zalam (Cyperus esculentus),[2,18] Sahad khalis (Pure Honey),[2,24] Marzanjosh (Origanum majorana).[29]

## BADAL (SUBSTITUTES)

Banafsha (Viola odorata), Marzanjosh (Origanum vulgare),[2,18] Nilufar (Nymphaea lotus).[24]

## MIQDARE KHURAQ (DOSE)

Powder of flower: 5 g, Roghane gul: 10 ml, Arqe gulab: 25 ml.[2]

## MURAKKABAT (FORMULATIONS)

Majoon Dabeedulward, Safoofe Qula,[2,18] Gulqand Aftabi, Gulqand Mahtabi,[24] Arq Gulab, Majoon Ushba, Sufoof Chobchini, Sufoof Mulayyin, Safoof qula,[1] Dawaulmish barid, Mufarreh nizam, Itrifal muqawwi dimagh, Tiryaq nazla,[2] Jawarish Amla shada, Muqawi Dimagh, Itrifal Zamni, Roghane-gul,[2] Jawarish Tamar Hindi.[1]

## VIII. CHEMICAL CONSTITUENT

### Flowers:

Essential oil: Citronellal,[4,11] geraniol,[1,11] non adecene, linalool nerol,[1,11] beta-phenylethanol,[11]

eugenol, methyl eugenol, fernesol, geranylacetone, nerol oxide, methylgeranate.[13] Meyhyl-ursolate, B-amyrin,[1] resin,[28] organic acids,[4,13] gallic acid,[27] 2-hydroxyursolic acid,[1] tannin, cyanine,[2,13] sugar,[11,21] cyanidin-3,5 Diglucoside,[1,17] quercitrin, [2,13] quercetin.[4] 2-phenyl ethyl-6-O-  $\alpha$ -L-arabinofuranosyl- $\beta$ -D-glucopyranoside.[13]

**Pollen:** Carotene, sugar,[4,13] chlorogenic acid.[4,11]

**Seeds:** Fatty acids: palmitic acid, stearic acid, oleic acid ( $\omega$ -9), linoleic acid ( $\omega$ -6),  $\alpha$ -linolenic acid ( $\omega$ -3).[30]

**Roots:** Citronellal, nerol, geraniol, eugenol, meyhyl-ursolate,  $\beta$ -sistosterol.[17]

## IX. REPORTED PHARMACOLOGICAL ACTIVITY

1. **Antidiabetic effect:** Methanolic extract of Rosa damascena exert anti-diabetic effect on oral administration, significant decrease in blood glucose was observed after maltose loading in normal and diabetic rats in a dose dependent manner.[8]

2. **Antimicrobial effect:** Essential oil, absolute and hydrosol of *Rosa damascena* show wide spectrum antimicrobial activities. Essential oil and absolute have strong antibacterial activity against *Pseudomonas aeruginosa*, *Escherichia coli*, *Staph.aureus*, *Chromobacterium violaceum*, *B. subtilis*, and *Erwinia carotovora* strains.[8]
3. **Antioxidant effect:** *Rosa damascena* shows antioxidant activity. Source of natural antioxidant are primary phenolic compound that are found in all parts of plant such as vegetables, seeds, fruits, leaves, roots and barks.[8]
4. **CNS depressant effect:** The flowering tops extract at the doses of 25 and 50 mg/kg in swiss mice of either sex (20-25 g) significantly induced the sleep and also prolonged the duration of sleeping time in test animals as compared to control, in the pentobarbitone induced hypnosis test.[31]
5. **Analgesic effect:** The effect of ethanolic extracts in mice on hot plate and tail flick was evaluated, showed analgesic effect.[8]
6. **Anti-Aging effect:** *Drosophila* Supplemented with plant extract, resulted in a statistically significant decrease in mortality rate in male and female flies.[8]
7. **Anti-Inflammatory effect:** The effect of hydroalcoholic extract of *R. damascena* on rat paw edema induced by carrageenan was demonstrated. The extract reduces edema significantly which may be acted by inhibiting the mediators of acute inflammation.[8]
8. **Hypotensive effect:** The effect of three doses of hydro-alcoholic extract of *R. damascena* on Wistar rats, SBP was evaluated. SBP decreased by extract administration. Maximal SBP in dose 250 mg/kg ( $\Delta$  -14.37 $\pm$ 1.6 mm Hg,  $p < 0.01$ ), doses 500 mg/kg ( $\Delta$  -28.12 $\pm$ 1.8 mm Hg,  $p < 0.001$ ), and 1000 mg/kg ( $\Delta$  -34.14 $\pm$ 4.5 mm Hg,  $p < 0.001$ ) was significant compare to saline group ( $\Delta$  5.4 $\pm$ 0.8 mm Hg,  $n = 8$  for each group).[32]

## X. CONCLUSION

Gul-e-Surkh (*Rosa damascena* Mill.) is a very important herbal drug in Unani system of medicine. The present review summarizes some significant pharmacological studies and phytochemical investigations. Literature review and experimental studies shows its Laxative (in fresh form), muqawwi aazae ra'eesa (vital organ tonic), muqawwi badan (body tonic), muqawwi

meda (gastric tonic), muqawwi jigar (liver tonic), muqawwi reham (uterine tonic), muhallil warm (resolvent), musakkin-i-alam (intestinal tonic), daf-e-taffun (antiseptic), antidiabetic, antimicrobial, antioxidant, CNS depressant, anti-inflammatory, analgesic and anti-aging effect. The scientific studies have proved most of the claims of traditional medicines.

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