

## Review article

# *Rosa Damascene* Mill. (Rose): A versatile herb in cosmetology

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## ABSTRACT

With the improvement of economic status and the desire for beauty, the interest in health and skin care is increasing. For these demands, since ages medicinal plants are in vogue. A variety of plants, cosmetics and foods with novel bioactive ingredients for skin care and beauty are under constant research and development. Skin is influenced by various factors such as Ultra-violet rays, stress, hormones and aging which together lead skin to lose elasticity, changes in pigmentation and wrinkle formation. Many medicinal plants have proven effects in skin care and beauty treatment. From this list of medicinal plants, one which is famous for its beauty, flavor and fragrance is *Rosa damascene*.

*Rosa damascene* has many therapeutic action and postulated pharmacological studies such as anti-arthritis, anti-microbial, cardio protective, anti-inflammatory, antioxidant, analgesic, immune-modulator, gastro-protective, and skin ameliorative effect. Research in the field of Cosmetology has proven the effect of *Rosa damascene* in rehydrating skin, reducing scars and stretches, acne management, lowering skin pigmentation, delaying wrinkling and is recommended as a skin vitalizing agent. In this review, the morphology, chemical constituents, and some pharmacological activity are discussed.

**Keyword:** Skin, cosmetic, *Rosa damascene*, morphology, chemical constituents

## INTRODUCTION

Natural beauty is a blessing and sign of healthy life for any individual. And every human being urge to maintain it as a state of eternal youth. The history of application of cosmetic products is present from since centuries. Several documents of literature showed the use of castor oil as protective balm, beeswax as a skin cream, rose water, olive oil, belladonna alkaloids (atropine of *Atropa belladonna* L.) as a pupil dilator and so on (Dorni, et al., 2017) But as the time passed, and advances in medical field to understand better scientific skin physiology, a revolution in personal care products occurred and the cosmetics industries started research on natural herbal plants.

Plants are richest source of antioxidant activity because they survive in environment rich in harm full sun rays such as ultra violet radiation. And until now , many innovative personal care products with pharmacological actions are available on the counter like anti-hyperpigmentation, anti-aging, anti – inflammatory, anti- carcinogenic, anti-allergic, moisturizing, pro-collagen, Sun protection factor (SPF) creams etc.

Some medicinal plants which have cosmetics property are *Santalum album*, *Aloe barbadensis*, *Curcuma longa*, *Crocus sativus*, *Azadiracta indica* and *Rosa damascene* etc.

*Rosa damascene* is a paramount medicinal drug and has several pharmacological and therapeutic action such as antipyretic, antiseptic, antiemetic, anti-obstructive, analgesic,

digestive, stomachic, liver tonic, cardiac tonic, brain tonic, general tonic, desiccant, detergent, demulcent, palpitation, headache, constipation, mouth ulcers etc. (Hakeem M, 2011) (Ghani , 1921) (Anonymous, 1972) (Ibn-e-Baitar, 1987). Flower of *Rosa damascene* medicinally used in various disease such as stomach pain, epistaxis, itching on skin, throat infection, pain in gums, uterus, eyes, ear, and rectum and so on.

## Habitat

*Rosa damascene* is a small shrub, 1-1.8 m high, and a wide number of species are cultivated in gardens. This plant is found throughout the world in India, Azerbhaijan, Kasan, Faras etc (Quraishi, et al., 2019)

## Taxonomical Classification

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Rosidae
Order	Rosales
Family	Rosaceae
Genus	Rosa L.
Species	<i>Rosa</i>

*damascene* Mill. (USDA, 2019)

## Vernacular Name and etymology

Arabic	Ward-e-Ahmer
Bengal	Golap
Gujarati	Moshamee Gulab
Hindi	Gulab
Kannad	Rojahu
Malayalam	Rojapuvvu

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Marathi	Gulab
Persian	Gul-e-Surkh
Punjabi	Gulab
Tamil	Rojapoo
Telegu	Gulabi,Roja,Panniru
Urdu	Gulab
French	Quatre Saisons
Spanish	Rosal de damasco, Rosalino de olor

(Anonymous, 2007) (Quraishi, et al., 2019)



Figure: Rose Flower

#### Plant description

*Rosa damascene* is a climbing perennial shrub with large hooked prickles. The stem is branched, prickly, erect and woody. Leaves are compound, imparipinnate and petiolate. Flowers are complete, hermaphrodite, perigynous with red, white and pink colour (Quraishi, et al., 2019). Macroscopically, Flowers are stalked, pinkish consist of sepals, petals and stamens attached to pedicle with thalamus, and stalk is light green, slender, covered with numerous prickles and hairs. Sepals 5, free, 1.3-2.4 cm long, unequal, leaf like having creamish green to yellowish green colour with glandular hairs. Petals numerous, pinkish yellow, 1.5-4.2 cm long, 1.3-2.5cm wide, smooth obviate to sub-cordate. Stamens numerous, free, unequal, dorsifixed, dark brown, filament 0.3-0.5 cm long, carpels free, ovary inferior, styles lateral, hairy, free and stigma terminal (Anonymous, 2007).

#### Microscopic view

Sepals shows single layered epidermis on both surfaces, numerous long, unicellular hairs, both epidermis have mesophyll consisting of round to oval, thin walled, parenchymatous cells and vascular bundles. Petal shows lower epidermis papillose and without cuticle, and upper epidermis single layered with thin striated cuticle, followed by mesophyll consisting of oval to polygonal, elliptical, thin-walled, parenchymatous cells, number of vascular bundles found scattered in this zone.

Powder; light brown in colour, fragments of petal of epidermis consisting of thin –walled, sinuous cells to form papillae, xylem vessel with spiral thickenings long, pointed, uniseriate, unicellular hair and stalked capitate glandular hairs (Anonymous, 2007)

#### Chemical constituents

*Rosa damascene* contain 4-amino-furazan-3-carboxylic acid, citronellol, 2-trifluoromethylbenzoic acid 2-octyl ester,  $\alpha$ -Pinene,

$\beta$ -Pinene,  $\beta$ -Myrcene,  $\alpha$ -Terpinene,  $\beta$ -ocimene, undecanoic acid isopropyl ester, 2-amino-propionic acid, N-butyl-2-decanamine, nonadecane,  $\beta$ -citronellol, geraniol, nerol, geranyl acetate, eugenol, methyleugenol, terpenes, glycosides, flavonoids, and anthocyanins etc (Koksa, et al., 2015) (Hajhashem, et al., 2010) (Verma , et al., 2011)

#### Taste

Astringent (Anonymous, 2007)

#### Parts used

Flowers, Flower buds, petals, stamens, oils and extract (Anonymous, 2007)

#### Dosage

3 to 5grams

#### Adverse Effects

Harmful for sexual power, cold and cough

#### Correctives

*Pimpinella anisum L.*

#### Substitute

*Viola odorata*

#### Products of *Rosa damascene* Mill.

- Rose Water
- Rose oil
- Dried Flower
- Rose Hip

(Boskabady, et al., 2011)

#### Traditional uses of *Rosa damascene* Mill.

- The decoction of flowers of *Rosa damascene* was used for the strengthening of heart, eye washing as an antiseptic, mouth wash, skin glowing, chest and abdominal pain, menstrual problem, laxative, and insomnia, etc
- Rose and honey mixture is used for gargling and it is very effective for throat problems
- Paste of rose petals on face is used for pimples and clear facial skin
- The root of rose is beneficial against hemorrhage and diarrhea
- Rose oil with vinegar, local application is beneficial in headache and cures insomnia
- Local application on head and its inhalation and instillation in nose also relieves headache and act as a relaxant
- Oral intake of its cures bilious dysentery , gastritis and intestinal wound
- Local application is beneficial in stomatitis, oral thrush, and blephritis

(Mahboub, 2016) (Andalib, et al., 2011) (Kirtikar , et al., 1986) (Chopra , et al., 1958) (Dymock , et al., 1980) (Nicolov , et al., 1976) (Baitar, 2003)

## PHARMACOLOGICAL STUDIES

#### Anti-solar activity of *Rosa damascene* Mill.

Tabrizi, et al., done an in vitro study on *Rosa damascene* extract and prepared various solvent mixtures like acetate: ethanol,

water: ethanol, and ether by maceration and soxhletion method. The result showed that extracts can effectively absorb UV radiation in the range of 200-400 nm. The study also subjected the plant extract with oil and water cream base and sun protection factor (SPF) was determined and suggested that the extract with cream base showed an effective SPF (Tabrizi, et al., 2003)

#### Anti -aging activity of *Rosa damascene* Mill.

Jafari, et al., performed study on *Drosophila* flies and the flies supplemented by the extract of *Rosa damascene*. And study concluded that the plant exhibited decreased in mortality of flies without effecting any secondary physiological mechanism (Jafari, et al., 2008)

Another study was done by Krishnan, et al., on polyherbal formulation by using aqueous extract of *Rosa damascene* flower, *Clerodendrum paniculatum* leaves, *Murraya Koengii* leaves and *Annona squamosa* leaves which exhibit anti-aging properties by increasing the collagen content in human dermal fibroblast. The study showed significant result against standard control drug by up regulating the Collagen-I gene expression and promoted building of collagen matrix (Krishnan, et al., 2017)

#### Skin glowing property of *Rosa damascene* Mill.

Haque, et al., performed a survey study on 43 plants from 32 families under 40 genera. These plants are mainly from herbal cosmetics. The study suggests skin glowing property in rose (Haque, et al., 2018)

#### Antimicrobial activity of *Rosa damascena* Mill.

Shohayeb, et al., completed a study on *Gul-e-Surkh* (*Rosa damascena* Mill.) and petals were subjected to water, hexane, and ethanol and fractionated with ethyl acetate, butanol and chloroform. The extracts were evaluated against eleven gram-positive, gram-negative, acid-fast bacteria and three fungi. The study concluded that the extracts showed moderate broad spectrum antimicrobial activity (Shohayeb, et al., 2014)

#### Relaxant activity of *Rosa damascena* Mill.

Boskabady, et al., done an animal study on guinea pig tracheal chains to study the effect of ethanolic extract and essential oil of *Rosa damascene* as relaxant (bronchodilator) in comparison with saline as negative control and theophylline as positive control. In both groups, the tracheal chains were contracted by KCl in one experiment and in another experiment, contracted by methacholine. The extract and essential oil of *Rosa damascene* showed relatively potent relaxant effects compared with the effect of saline (Boskabady, et al., 2006).

#### Other pharmacological studies

- Antioxidant activity (Yassa, et al., 2009)
- Anti-inflammatory activity (Hajhashem, et al., 2010)
- Analgesic activity (Bani, et al., 2014)
- Antidepressant (Nyeem, et al., 2006)
- Nephroprotective activity (Khaliq, et al., 2015)
- Anti-diabetic activity (Gholamhoseinian, et al., 2009)
- Anti HIV activity (Mahmood, et al., 1996)

## CONCLUSION

*Rosa damascene* Mill. is one of the famous ornamental and widely used herb in traditional medicine and many pharmacological studies showed its potential therapeutic

benefits against various diseases and in cosmetics, the results are similar to the standard drugs. There is an immense obligation to scientifically explore and evident its medicinal as well as cosmeceutical values at the molecular level with the help of latest tools and techniques of biotechnology.

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## CONFLICT OF INTEREST

The authors have no conflicting financial interests.

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