

**USES OF MEDICINAL VALUES OF ROSA DAMASCENA MILL IN DENTISTRY–A
REVIEW**

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ABSTRACT

Out of 200 Rosaceae family members *Rosa damascena* mill L. is one of the most important. Eventhough they are being widely used as an ornamental plant and for perfuming effect they also known for their medicinal values. Since ancient times it's being used as a medicine in traditional medicine. Based on lab analysis this plant species is having pharmacological effects such as antibacterial, anti inflammatory, antioxidant, hypnotic, anti diabetic, and relaxant effect on tracheal muscles. This article is a comprehensive review on the pharmacological effects of *R. damascena* in the dental perspective.

KEYWORDS: *Rosa damascena*, Rose oil, Pharmacological effects.

INTRODUCTION

Natural phytochemicals products have been used since ancient times, even folk stories narrates them. In dentistry also for the long time herbs and their products are being used for the treatments such as clove, Neem, aloe vera, etc. The herbal products are also being increasingly used as plaque reduction and for healthy gums.

Herbal products generally used as

1. Antimicrobial agents
2. Anti-inflammatory agents
3. Sedative and anxiolytics
4. Endodontic irrigants and Intra canal medication.

One among the traditionally used plant is *Rosa Damascena* Mill commonly known as rose of Damask and well known ornamental plant and have been referred as the king of flowers. It is a perennial bushy semi arid plant reaches approximately 1 to 2 meters in height^[1,2] and is being cultivated in all over the world including Iran, Europe, Bulgaria, Turkey and India^[3] Out of 200 species of Rosaceae family it is important one. Apart from decorative purpose since ancient times it is cultivated for preparing perfume, medicine and food.^[4] *R. damascena* is mainly fame for its perfuming effects.^[5] The rose water sprinkled in weddings to ensure a pleasant perfumed environment, a happy marriage and is symbol of love and purity and also used to aid meditation

and prayer. Its popularity is not only because of the perfuming effect but also is due to holybeliefs about it. Because of the low oil content in *R. damascena* and the lack of natural and synthetic substitutes, essential rose oil of this plant is one of the most expensive ones in the world markets.^[6] The crude distillation of roses for the oil was originated from Persia and spread across the provinces of Ottoman Empire in 14th century. Till the end of 16th century Iran was the leading producer and exporter in the world.^[7,8] In India main hub for rose oil production is Karnataka and Ultra pradesh.

Traditionally the *R. damascena* has also been used for medicinal purposes.^[9] Chemicals derived from the parts of this plant have been extensively studied both in vitro and in vivo. In this review we collect and discuss important pharmacological effects of *R. damascena* which are relevant to dentistry.

Traditional uses

In India traditionally *R.damascena* is being traditionally used in ayurvedic medicine as gulhand in the treatment of gastric problems, hepatic and blood disorders. Similarly in ancient medicine *R.damascena* mill included in the treatment of chest and abdominal pain, menstrual, digestive and heart problems. Red Indian tribes in north America used a decoc the root of *R. damascena* plant as a cough remedy to ease children's cough and as a gentle laxative. It also is being used to heal depression, grief,

nervous stress and tension. It helps in the reduction of thirst, healing old cough, special complaints of women, wound healing, and skin health.^[10] The pharmacological effect of herbs and their extracts varies due to their differing phytochemicals composition. These phytochemicals play key role in medical properties of plants. The composition and strength of the phytochemicals varies with herbs and within herbs. The composition variation within the same species occurs due to influence of environmental and geological factors where they grow.

MATERIALS AND METHOD

Online web based search was made with the keywords of Damask rose, *Rosa Damascena* Mill, Medicinal and Pharmacological properties of *R.Damascena* and articles related to these keywords were collected and reviewed.

DISCUSSION

Most of the modern medicines are based on the synthetic derivatives of plants. Since these derivatives are having their own adverse effects. The major Pharmaceutical companies started to do research in herbs as an alternative. In dentistry herbs and their products are being used as medicine for their anti-inflammatory, analgesic, antibiotic and wound healing tendency. Among them turmeric, neem, aloe vera and miswak are widely used. *R.Damascena* is such a plant which is having in vitro and in vivo proven medicinal properties. It can utilize for oromucosal lesions such as gingivitis, ulcers, oral lichen planus, leucoplakia and tobacco pouch keratosis. The anti-inflammatory, analgesic and wound healing tendency can be utilized in the treatment of oral ulcers such as aphthous, traumatic and herpetic which are painful induce difficulty in eating. The antioxidant property can be utilized in the treatment of leucoplakia and tobacco pouch keratosis. In the treatment of lichen planus we can utilize the analgesic and wound healing property of *R.Damascena* Mill. We can also use the antimicrobial and anti-inflammatory properties of this plant in the plaque control and bleeding gums. Since effectiveness of *R.Damascena* Mill against *Staph.aureus* one of the most common bacteria in oral flora we can use this plant in the dental related problems even as root canal irrigants. Some of the proven medicinal properties of *R.Damascena* Mill which will be useful in dentistry have been discussed.

Antimicrobial effects

Studies had shown that *R.damascena* mill is having broad antimicrobial effects. The essential oil and its products having these effects. In 2009 Ulusoy and his associates showed the antibacterial inhibitory tendency by the rose essential oil and its products. They demonstrated its effectiveness against *E.Coli*, *Pseudomonas*, *Staph aureus* and *Chromobacterium violaceum*. Rose absolute also showed effectiveness against both gram positive and gram negative,^[11] bacteria. Extracts of rose showed the strongest effects

against *S.enteritidis* and *M.smegmatis*.^[12] The in vitro by disc diffusion method it has been proven the effectiveness of *R.damascena* against the *E.Coli*, *Staph. aureus* and *Ps.aeruginosa*.^[13]

Antioxidant effects

The phenolic compounds present in the plants are the causative agents for antioxidant properties.^[14] The presence of phenolic compounds in *R.damascena* mill was proven by Kumar *et al* in 2009 and determined the antioxidant effects by 1,1-picrylhydrazyl (DPPH) free radical analytical method. This analytical study proved that *R.damascena* mill has high antioxidant property.^[15] To evaluate lipid peroxidation properties Ferric ammonium thiocyanate method was used and they also proved antioxidant property of hydro alcoholic of petals and essential oil of *R.damascena* mill. In addition to these flavonoid glycosides of *R.damascena* mill quercetin-3-0-glucoside, kaempferol-3-0-rhamnoside and kaempferol-3-0-arabinoside have antioxidant activities. In vivo studies showed that *R.damascena* mill also having inhibitory effect on lipid oxidation. These antioxidative inhibitory effects are comparable with α tocopherol and can be utilized in the prevention of free radicals.

The anti-inflammatory effect

This plant has also been shown to have anti-inflammatory effect.^[17] The effect of essential oil and hydroalcoholic extract of *R. damascena* on rat paw edema induced by carrageenan was demonstrated. Essential oil had no anti-inflammatory effect while the extract could significantly reduce edema which maybe acted by inhibiting the mediators of acute inflammation.^[17,18] In addition, *R. damascena* contains vitamin C,^[1] which has antioxidant and anti-inflammatory effects.^[18,19]

The analgesic effect

The analgesic effect of *R. damascena* is also reported. In a study, the effect of aqueous, ethanolic and chlorophormic extracts in mice on hot plate and tail flick was evaluated and only ethanolic extract showed analgesic effect.^[20] The acetic acid formalin and tail flick tests in mice showed that the hydroalcoholic extract and essential oil of *R.damascena* mill failed to show analgesic effects in mice. However, hydroalcoholic extract has a potent analgesic effect in acetic and formalin tests and no effect on tail flick test.^[21] Based on the study's results it can be derived that ingredients of the plant that not soluble in water may be responsible for the analgesic effect. The non water soluble components of rose oil quercetin and kaempferol may be responsible for the analgesic effect.^[20]

CONCLUSION

The main advantages of using herbs are easy availability, cost effectiveness and less toxicity. Herbs are widely used in dentistry for the purpose of anti inflammation, analgesic, antibacterial and acceleration of wound

healing. They also aid in healing and are effective in controlling microbial plaque in gingivitis and periodontitis and thereby improving immunity. Though the in vitro results showing promising hope more clinical trials are needed to evaluate biocompatibility and safe factor before they can be recommended for clinical use conclusively.

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