

## Classes of Ghulab along with Medicinal Constituents for Human Health

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**Abstract:** Nine groups of roses namely Micro-miniatures, Miniatures, Mini-Floras, Floribundas, Grandifloras, Hybrid Teas, Climbers, Shrubs and Old Garden Roses are utilized considering their specific purposes. The hips of wild rose have very high concentration of Vitamin C, almost thrice that of the citrus fruits have. The Chinese use the flowers to prepare a drink which acts as an energy stimulant, blood tonic and also works in case of digestive irregularities. Petals of *R. damascene* are steam distilled to produce true Bulgarian rose oil used in 96 percent of all women's perfumes. Medicinally it is used to alleviate depression and anxiety. Rose hips also known as seed pot is the round portion just below the petals of rose flower which contains the seeds of a rose plant. Fresh rose hips contain high concentration of Vitamin C and can be used for treatment of cold and flu and Vitamin C deficiency. Moreover, they are also used for stomach disorders like stomach acid deficiency, Gall stones and Gall bladder ailments, Kidney disorders, increasing immune function during exhaustion etc. In food and manufacturing industry they are also used in tea, jam etc. as a natural source of Vitamin C. Antibacterial (Antimicrobial) and Antifungal Activity of Extracts from Rose Antimicrobials or anti-bacterial are generally compounds that kill or slow down the growth of bacteria. Extracts of rose petals have been reported to show anti-bacterial activity against many pathogenic bacteria. The extracts of petals possess anthocyanins that have high antioxidant property as well as anti-inflammatory activity. Anthocyanins are basically polyphenols belonging to the family of compounds known as flavonoids. They are largest group of water soluble pigments present in nature and responsible for red, blue, purple and orange coloration of many fruits, flowers and vegetables. They are distinguished from other flavonoids by their capacity to form flavyliumcations. Rose petal water has also been used as an eye wash and mouth wash. Besides containing anthocyanins the petals of rose are also reported to possess carotenoids, proanthocyanidins, essential oils, Tellimagrandin I, plant acids and Rugosin B. The alcohol Geraniol is the chief constituent of the liquid portion of rose oil, which upon oxidation yields Citral- an aldehyde. Thoil of rose also contains 1-citronellol. *Rosa canina* L. petals have been reported to increase effectiveness of many antibiotics against methicillin-resistant *Staphylococcus aureus*. Recent research shows that extracts from rose petals show good antimicrobial activity against cultures of *E.coli*, *S.pneumoniae* and *P. aeruginosa*. As per the study, the alcoholic extract showed the best activity against different pathogenic bacteria followed by the aqueous extract and then the petroleum ether extract. Antibacterial activity of different parts of rose plant has also been carried out where in comparison was made between methanolic and ethanolic extracts of petals, stems and roots of red and yellow rose plant. The report highlighted the antibacterial effect of red rose petal as compared to other extracts. The extract was reported to be highly effective against cultures of *E. coli*, and *P. aeruginosa*. The comparison of ethanolic extracts of petals and leaves of red rose and orange rose showed maximum activity against *P. aeruginosa*. A recent study reported moderate to broad spectrum antimicrobial activity of essential oil and different extracts of *R. damascena* petals against varied gram positive and gram negative bacteria, acid fast bacteria and fungi. Antifungal activity against *Penicilliumnotatum*, *A. niger* and *Candida albicans* and antibacterial activity mainly against gram positive *S. aureus*, *B.subtilis*, *S.pyogenes* and gram negative *Acinetobacter baumannii* is notable. Aqueous extract of white rose (*Rosa damascene*) have been studied for their anti-oxidative and cytotoxic properties. The extract has been reported to display excellent cytotoxic action towards the human tumor cell line. At lower doses the extract was reported to show decrease in blood parameters like fasting glucose, creatinine, blood urea nitrogen and uric acid. The work also reported reduced level of alkaline phosphatase, glutamine pyruvate transaminase, glutamine oxaloacetate transaminase and lipid peroxide level in rats receiving oral administration of acetone extract at 50 mg/kg body weight.

**Keywords:** Alkaline phosphatase; Glutamine pyruvate transaminase; Glutamine oxaloacetate transaminase and lipid peroxide level.

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## INTRODUCTION

In general, depending on their size, there are nine different classes or groups of roses- Micro-

miniatures, Miniatures, Mini-Floras, Floribundas, Grandifloras, Hybrid Teas, Climbers, Shrubs and Old Garden Roses. Micro-miniature Roses are the smallest of roses and can only grow to a height of 12-14 inches

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and are just the size of a dime when completely bloomed. Example of such type of rose is “Cindrella”. Miniature Roses are little bigger than micro-miniature rose plants, can grow to a height of 2-3 feet and its blooms are 1-2 inches across. Example of a miniature rose is “Sun Sprinkle”. Mini-Flora Rose has bigger size than miniature but smaller than Floribunda. Plants can reach upto a height of 3-4 feet and blooms can be 3-4 inches across. Floribunda Rose typically grows to a height of 4-5 feet and consists of huge clusters of flowers such that each cluster can make a bouquet. Grand flora Rose plant can reach up to 6 feet in height. Have long stems with 3-4 blooms per stems. Have bigger flower than floribunda but are fewer in number. “Dream Come True” and “Sweetness” are the examples of Grand flora. Hybrid Tea Rose plants can reach to a height beyond 6 feet and blooms can be 6 inches across. They consist of a long stem with one huge flower at the end. Example of hybrid rose is “Red Intuition”. Climbers generally grow on a support or wall of a building and can reach 12-15 feet. Some of them even cover an area of 8,000 sq. feet. “Lady Banks” is a climber. Shrubs range in size from ground covers to shrubs and have a wide range of bloom size. Example- “Double Pink Knockout”. Old Garden Roses sometimes called “antique roses”, can have a wide range of growth habit and bloom size and are highly fragrant. They usually bloom only in the spring or early summer. “Paul Neyron” is an example. The hips of wild rose have very high concentration of Vitamin C, almost thrice that of the citrus fruits have. The Chinese use the flowers to prepare a drink which acts as an energy stimulant, blood tonic and also works in case of digestive irregularities. Petals of *R. damascene* are steam distilled to produce true Bulgarian rose oil used in 96 percent of all women’s perfumes. Medicinally it is used to alleviate depression and anxiety (<http://www.cloverleaffarmherbs.com/rose>).

Rose hips also known as seed pot is the round portion just below the petals of rose flower which contains the seeds of a rose plant. Fresh rose hips contain high concentration of Vitamin C and can be used for treatment of cold and flu and Vitamin C deficiency. Moreover, they are also used for stomach disorders like stomach acid deficiency, Gall stones and Gall bladder ailments, Kidney disorders, increasing immune function during exhaustion etc. In food and manufacturing industry they are also used in tea, jam etc. as a natural source of Vitamin C. But despite of all these uses they too have many side effects. Due to high concentration of Vitamin C, it may lead to many side effects such as increasing the risk for kidney stones, increasing acidity of blood, delaying blood clotting time and increased iron absorption that may affect patients with iron related disorders and many more (<http://www.webmd.com/vitamins-supplements/ingredientmono-839-rose%20hip.aspx>). Antibacterial (Antimicrobial) and Antifungal Activity of Extracts from Rose Antimicrobials or anti-bacterial

are generally compounds that kill or slow down the growth of bacteria (Das *et al.*, 2014). Extracts of rose petals have been reported to show anti-bacterial activity against many pathogenic bacteria. The extracts of petals possess anthocyanins that have high antioxidant property as well as anti-inflammatory activity. Anthocyanins are basically polyphenols belonging to the family of compounds known as flavonoids. They are largest group of water soluble pigments present in nature and responsible for red, blue, purple and orange coloration of many fruits, flowers and vegetables. They are distinguished from other flavonoids by their capacity to form flavyliumcations (Miguel, 2011). Rose petal water has also been used as an eye wash and mouth wash. Besides containing anthocyanins the petals of rose are also reported to possess carotenoids, proanthocyanidins, essential oils, Tellimagrandin I, plant acids and Rugosin B. The alcohol Geraniol is the chief constituent of the liquid portion of rose oil, which upon oxidation yields Citral- an aldehyde. Thoil of rose also contains 1-citronellol.

*Rosa canina* L. petals have been reported to increase effectiveness of many antibiotics against methicillin-resistant *Staphylococcus aureus* (Rosnagel and Willich, 2001). Recent research shows that extracts from rose petals show good antimicrobial activity against cultures of *E.coli*, *S.pneumoniae* and *P.aeruginosa*. As per the study, the alcoholic extract showed the best activity against different pathogenic bacteria followed by the aqueous extract and then the petroleum ether extract (Hirulkar and Agrawal, 2010).

Antibacterial activity of different parts of rose plant has also been carried out where in comparison was made between methanolic and ethanolic extracts of petals, stems and roots of red and yellow rose plant. The report highlighted the antibacterial effect of red rose petal as compared to other extracts. The extract was reported to be highly effective against cultures of *E. coli*, and *P. aeruginosa* (Khan and Tiwari, 2011). The comparison of ethanolic extracts of petals and leaves of red rose and orange rose showed maximum activity against *P. aeruginosa* (Pandey *et al.*, 2012). A recent study reported moderate to broad spectrum antimicrobial activity of essential oil and different extracts of *R. damascena* petals against varied gram positive and gram negative bacteria, acid fast bacteria and fungi. Antifungal activity against *Penicilliumnotatum*, *A. niger* and *Candida albicans* and antibacterial activity mainly against gram positive *S. aureus*, *B.subtilis*, *S.pyogenes* and gram negative *Acinetobacter baumannii* is notable (Sohayeb *et al.*, 2014).

Aqueous extract of white rose (*Rosa damascene*) have been studied for their anti-oxidative and cytotoxic properties. The extract has been reported to display excellent cytotoxic action towards the human tumor cell line. At lower doses the extract was reported

to show decrease in blood parameters like fasting glucose, creatinine, blood urea nitrogen and uric acid. The work also reported reduced level of alkaline phosphatase, glutamine pyruvate transaminase, glutamine oxaloacetate transaminase and lipid peroxide level in rats receiving oral administration of acetone extract at 50 mg/kg body weight (Kashani *et al.*, 2014).

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