

# “ Phytochemical characteristics of *Rosa Indica*”

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## **ABSTRACT**

*Rosa Indica* (mainly known as the Bengal rose or China rose) petals are a rich reservoir of bioactive secondary metabolites, primarily alkaloids, flavonoids, tannins, phenolic acids, and anthocyanin.. Plants have been played an important role in a resource of natural medicines for human health, from the longer period of time. Some plants show antimicrobial properties and others also. The most important merit of using plant derived medicines is that they are low priced, readily and available and showing minor side effect. The present study deals with the antibacterial potential of crude extracts of petals of *Rosa Indica*. Through the agar disk diffusion method the antimicrobial potential of *Rosa Indica* was examined. Petals were collected, dried and its crude extract was obtained. Methanol and acetone were used as the extraction solvent. These extract were examined against two gram-positive (*Staphylococcus aureus*, *Bacillus cereus*) and two gram-negative (*E-coli*, *Salmonella typhi*) bacteria. Extracts prepared by all solvents showed antimicrobial action and established zone of inhibition. By performing phytochemical tests we have also observed positive results for flavonoid, tannin and alkaloid. These phytochemical have capability to inhibit in the growth of microorganism or can fight against microorganism. Rich source of compounds have been obtained in this particular plant. For inhibition of multiple drug resistant microorganisms, this extract can be tested. For making herbal drugs, extract of *Rosa Indica* may prove to be useful as an advance step in future aspects.

**Keywords:** Flavonoids, Phytochemical, Antimicrobial, Anthocyanin, Antibacterial.

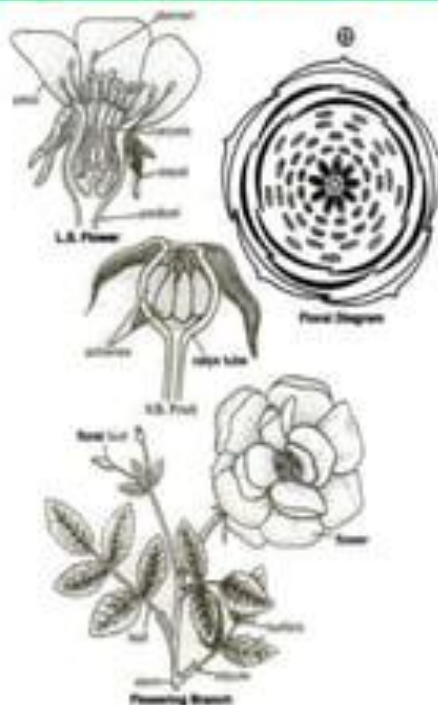
## INTRODUCTION

Therapeutic plants are generally available throughout the world. Therapeutic Plants are now more motivated than ever before because they are capable of producing numerous benefits to the community indeed to mankind, particularly inside the type of medication. These naturally occurring compounds are believed to found the building blocks of modern-day prescription medication as we recognized today. Rose has an influenced cultures artistically, economically, clinically, scientifically, psychologically and religiously since manhood could fragrance and appreciates its essences. The presence of anthocyanin in the rose petals in high concentration give assurance to these signs because anthocyanin are recognized for their ability of having anti-bacterial, anti-inflammatory and anti-oxidant activity. Beside that it also provides strength to plant vascular system and reduce blood.

Also carotenoids have an important role in the proper functioning of biochemical processes in animals and humans, including eyesight (pro-vitamin A), growth, and their reproduction. In a study, it was found that roses contain some compounds that may contribute to relaxation and anxiety reduction and are consumed as the tea. A well-known species, *Rosa Indica*, exhibits an antimicrobial properties and is used to cure several diseases like diarrhea, asthma, leukoderma and many other oral irritation. As described in the literature, the color value is one of the most important quality parameters and is a visual miracle that attracts many customers. Therefore, the color of the food source is the first criterion followed by users to evaluate and is a crucial step for product acceptance . Besides this, the Rosacea family is of great significance because of their use in several food preparations and perfumery. Commercially, rose producers do not learn much about plant leaves and their therapeutic uses. Compared to fruits and flowers, leaves are not explored for much research. In selected rose varieties, there is richness in secondary metabolites (anthocyanin, chlorophyll, and carotenoids) as well as antioxidant compounds. Therefore, the present investigation aimed to estimate the differences in the pigment contents (chlorophylls

and carotenoids), secondary metabolites (phenols and flavonoids), color measurements, and antioxidant activity of the leaves.

### Floral parts of *Rosa indica*:



## **MATERIALS AND METHOD**

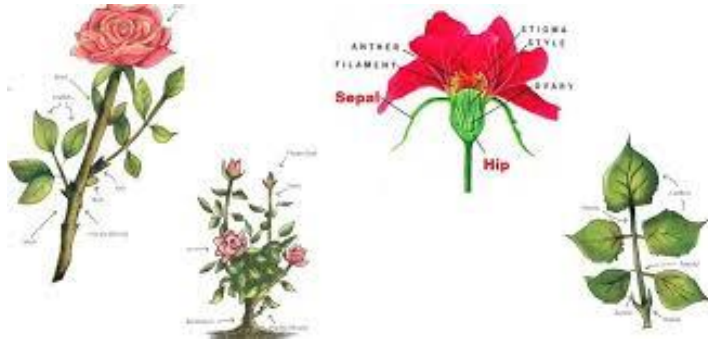
### **Collection of plant:**

Fresh flowers of *Rosa indica* were collected from healthy plants growing in nearby nurseries or from the garden in the flowering seasons. The flowers were plucked in the early morning to ensure the maximum freshness and the phytochemical content. The flowers were separated carefully from the flowers, and washed thoroughly with distilled water to remove dust and other contaminants and then air dried under shade at room temperature for about 7-10 days .

Shade drying is one of the best method to prevent degradation of heat sensitive bioactive compounds. The dried petals were ground into the fine powder using in a laboratory grinder and store in air tight container until further analysis.

### ***PREPARATION OF PLANT EXTRACTS***

To study antimicrobial potential of medicinal plants, it is very necessary to extract chemical components of our interest. The step includes a preliminary washing, drying, and crushing of petals in the process for obtaining equivalent sample. Maximum contact should be maintained between the surface of sample and solvent to enhance the kinetics of extraction. During the extraction procedure, all the potentially active components must be maintained. The plant material petals of *Rosa Indica* were brought, then dried it under shade and by using mortar and pestle dried petals were crushed to form a powder and stored in an air tight plastic container until used. For testing the potential of medicinal plants sample were prepared in methanol and acetone solvents. Extracts were prepared by dissolving 20gm of fine powder in 100ml methanol and acetone. The contents were incubated for 48 hours. Using soxhlet extraction method respective extracts were obtained. Then concentrated to dryness, residues obtained were preserved at 4°C. For further in-vitro studies of antimicrobial activity these extract were used .



## PHYTOCHEMICAL ANALYSIS

Extract and powdered specimens were screened for the presence of phytochemicals. And then respective phytochemicals were identified.

### Test for Tannins:

About 1ml of extract was dissolved in 3ml of water and were placed on water bath for 5 minutes and then filtered. 1ml of ferric chloride mixed to the filtrate. Dark green color and blue- black color if formed that will indicates that the presence of tannins.

### Test for Flavonoids:

To remove the fatty materials i.e. lipid layer, 0.5 gram of extract was mixed with petroleum ether and shake well. The obtained residue was added in 20ml of alcohol and filtered. 3 ml of the filtrate was dissolved with 4 ml of 1 % potassium hydroxide. A dark yellow color observed which indicates the positive result for the flavonoid.

### Test for Alkaloids:

0.5 to 0.6 gm. of various extract was added in 8 ml of 1 % HCL, heated and filtered. 2 ml of the filtrate were mixed separately with both reagent (Mayer and Wagner's). Presence of alkaloid can be detected from its turbidity or precipitate formation.

**Mayer's reagent:-** Add 1.36 gram of  $\text{HgCl}_2$  in 60 ml water and 5 gram of KI in 10 ml of water mix both and add sufficient water to make 100 ml and this will give cream or pale yellow precipitate indicating the positive result .

**Wagner's reagent:-** Mix 2 gram of iodine and 6 gram of KI in 100 ml water and this give brown or reddish brown precipitate indicate the desirable result.

**Taxonomical Classification of *Rosa indica***

Taxonomic Rank	Classification
Kingdom	Plantae
Subkingdom	Tracheobionta (Vascular Plants)
Superdivision	Spermatophyta (Seed Plants)
Division	Magnoliophyta (Angiosperms)
Class	Magnoliopsida (Dicotyledons)
Subclass	Rosidae
Order	Rosales
Family	Rosaceae
Genus	<i>Rosa</i>
Species	<i>Rosa indica</i> L.
Scientific Name: <i>Rosa indica</i> L.	
Common Name: Indian Rose / Rose	

**APPLICATIONS**

1. Antimicrobial drug formulations utilizes the tannis and phenols to exhibit multi drug resistant bacteria and candida fungi.
2. Anti -aging cosmetic leverages quercetin and flavonoids to scavenge free radicals and promote skin collagen production.
3. Natural food colorants employs water soluble anthocyanin pigments to replace harmful synthetic dyes in beverages.
4. Therapeutic aromatherapy oils extracted volatile terpenes to reduce anxiety, alleviates stress, and lower levels.
5. Eco-friendly textile dyes utilizes plant polyphenols to provide biodegradable, non-toxic coloring for the organic fabrics.

**USES****1. Identification of bioactive compounds**

Detects flavonoids, phenolic, tannis, alkaloids, glycosides and many other phytochemical present in rose petals.

**2. Antioxidant Activity**

Phenolic compounds and flavonoids help in utilizes free radicals and protect skin cells from damage.

### 3. Anti- Inflammatory Activity

Rose phytochemical reduce inflammation, redness, and irritation in skin disorders.

### 4. Wound Healing Potential

Bioactive constitutes promote tissue repair and accelerate wound healing.

### 5. Cosmetics Applications

Rose extracts are used in lotions, creams, face masks etc due to their soothing and moisturize effects.

## CONCLUSION

This study shows that *Rosa Indica* petals are a good source of natural plant chemicals such as, flavonoids, and anthocyanin. These compounds give the petals powerful property like antioxidant and antibacterial properties. This results proves that rose extracts can successfully fight harmful free polyphenols radicals and stop the growth of bacteria in the rose. Because of these qualities, *Rosa Indica* can be used as a safe, natural alternative to artificial chemicals and preservatives. Ultimately, this research highlights the great potential of using rose petals as a valuable ingredient in the various field like medical, cosmetic and in food industries

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