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**ISOLATION OF FRAGRANCE, ANTIBACTERIAL STUDY &  
PHYTOCHEMICAL ANALYSIS OF *JASMINUM AURICULATUM* AND  
*PLUMERIA ALBA***

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**ABSTRACT**

The goal of this research was to extract fragrance of *Jasminum auriculatum* and *Plumeria alba*. Numbers of experiments conducted to abstract the fragrance of Jasmine flowers. Biological screening has been done to evaluate possible antimicrobial activity on staphylococcus aureus & pseudomonas. Phytochemical studies carried out to find possible functional groups present in the extract of *Jasminum auriculatum* and *Plumeria alba*. IR data supports the possible functional groups present in the *Jasminum auriculatum* and *Plumeria alba*.

**Keywords: Fragrance, Antibacterial activity, Phytochemical analysis, FT-IR analysis**

**INTRODUCTION:**

*Jasmine* may be a genus of shrubs and within the dicot family dicot family with concerning two hundred species throughout vines the globe, out of that around forty species square measure reportable to be growing in India [1]. Bush may be a extremely domesticated decorative plant adult chiefly for its perfumed flowers. *Plumeria alba* the genus frangipani belongs

to the apocynaceae family of flowering plants [2]. The majority of the species are small deciduous trees or shrubs. *Jasminum auriculatum* may be a ligneous plant employed in ancient medicines, Ayurveda, Siddha and Unani [3, 4]. Its numerous uses are described in India's ancient history, and it also plays an important part in ayurvedic and normal herbal cure. The odour or

fragrance needs to have a smell which will be detected by the sense modality receptors within the nose. Flowers square measure natural resources of fragrance. Plants are used medicinally in several countries to extract potentially useful and powerful medicines [5]. *Jasminum auriculatum* flowers and buds square measure used for creating garlands, bouquets, veni used for decorating hair of girls and for non-secular offerings. Bush oil is thought to be distinctive, because it blends well with different floral extracts. *Plumeria alba* is a flowering plant with pleasantly fragrant blossoms that is widely planted for decorative purposes. Because of their aroma and odor, the gorgeous blossoms of the plant are used as ornaments [6]. *Jasminum auriculatum* is cosmopolitan in Asian nation, Nepal and Sri Lanka [7]. It's extremely valued all over the world for its high-grade perfumes, that is employed in soap and cosmetic industries and in ingredient mouth wash liquids. They're

**Plant material:** The plant *Jasminum auriculatum* and *plumeria alba* was collected from the vadodara district, Gujarat, India. It was varified and confirmed at department of chemistry, Parul institute of applied science, Parul university, vadodara, India. General Method: Our main purpose is to isolate fragrance from *jasminum auriculatum* and *plumeria alba* by research methodology,

conjointly helpful burning sensation, hyperdipsia, antiseptic, emollient, ulcers, stomatopathy, leprosy, skin diseases and aromatherapy [8]. *Plumeria alba* is used by Bapedi conventional healers in south Africa to pleasure diabetes mellitus [9]. In the Sekhukhune district, only *Plumeria alba* and *Momordica balsa mina* were used for diabetes mellitus. The decoction of *plumeria alba* leaves is used to work wounds and skin problems in Asia. The latex and bark are purgatives and diuretics, respectively [10]. The decoction of *plumeria alba* wood is used in Thailand to cure ulcers, leprosy, tinea, and cracked heels [11]. *Jasminum auriculatum* leaves are reportable to contain lupeol and jasminol [12].

The current study highlights the plants diverse folk and ayurvedic uses, as well as pharmacognostical, phytochemical pharmacological investigations, as well as its untapped potential [13].

#### **MATERIALS & METHODS:**

for this purpose several types of experiments were designed as under.

**Method of extract fragrance from *jasminum auriculatum* and *plumeria alba*:** The extraction of odour from *Jasminum auriculatum* and *plumeria alba* petals was tested using traditional methods such as however, we use distillation, Soxhlet extraction, direct drying below sunlight with adsorbent and other

techniques. It was discovered that there was no extraction of any of the methods listed above can be used to add aroma. Later, we experimented with the leaching procedure at room temperature, which had in reality a positive outcome. Leaching is a chemical reaction that occurs when a substance is exposed to solvent. 20 gm *Jasminum auriculatum* petals were added into 100 ml round bottom flask containing 50 ml of methanol. 2 days later the fragrance was detected. The process of leaching the same technique was followed for *Plumeria alba*.

**Isolation of compound:** The stem methanol extract was taken. Using CHCl<sub>3</sub>: Methanol as a solvent, this resulted in a spot on TLC. A crude separation of methanol soluble extract was carried out over silica gel. Visualize the spots on UV light in short wavelength. In *Jasminum auriculatum* extract, mobile phase is 9 ml of chloroform and 9 ml of methanol as a solvent. And mobile phase is 1 ml of chloroform and 9 ml of methanol as a solvent in the extract of *Plumeria alba*.

**Detection Method:** The fragrance can be detected by phytochemical screening and functional groups presents in *Jasminum auriculatum* and *Plumeria alba* can be confirmed by IR analyses.

## RESULTS AND DISCUSSION:

**Phytochemical screening:** The phytochemical screening for extract of *Jasminum auriculatum* and *Plumeria alba*.

Table 1 represents the results of phytochemical screening on *Jasminum auriculatum* and *Plumeria alba* and showed that the present or absent of alkaloids, carbohydrates, flavanoids, tannins, phenols, glycosides, saponins, fats and oils, terpenoids, resins, polyphenols, gum and mucilage, steroids and coumarins.

**FT-IR Analyses:** IR Spectroscopy is a technique for detecting light absorption by a substance in the infrared region of the electromagnetic spectrum. A molecule must have a bond within its structure that can exhibit a dipole moment, which means electrons within a bond are not shared equally, in order to absorb light.

**Graphical interpretation:** IR spectra of *Jasminum auriculatum* extract showed frequencies (cm<sup>-1</sup>) at 3500-2800(b), 2924.94, 2854.98, 2348.39, 1627.54, 1514.66, 1460.59, 1315.59, 1193.85, 1101.31, 656.07, 600.64 indicating alcohol, phenol, carboxylic acids, secondary amines, nitriles, primary amines, aromatics, alkane, aromatic amines, thioketones, alkyl halides respectively. **Figure 1** represents IR analysis data graph of *Jasminum auriculatum* extract.

IR spectra of *Plumeria alba* extract showed frequencies (cm<sup>-1</sup>) at 3500-2800(b), 3392.47, 3331.75, 2935.46, 2836.54, 2245.16, 1845.75, 1702.74, 1514.62, 1494.88, 1475.30, 1159.47, 1090.83, 1023.92 indicating carboxylic acid, amines,

phenol, alkanes, alkynes, anhydrides, ketones, aromatics, nitroalkanes, alkanes, tertiary alcohol, secondary alcohol, primary alcohol respectively. **Figure 2** represents IR analysis data graph of *plumeria alba*.

**Antibacterial activity:** A bacterial assay is a sort of biological assay that is carried out with bacteria. The biological assay for bacteria is based on a comparison of bacterial growth inhibition as evaluated by the compound extract concentration compared to that created by a lack of concentration of a typical antibiotic formulation with a non-steroidal antimicrobial agent activity. The bacterial assay can be done in a variety of ways method using a disc plate.

The following bacteria strains were involved in the study.

1. *Staphylococcus aureus*

2. *Pseudomonas*

The bacterial culture was obtained from the microbiology department of parul institute of applied science. The media used for the growth of bacteria was nutrient agar.

The methanolic extracts were used to find antibacterial activity. These were given positive results for the study. The antibacterial studies were investigated by disc-plate method.

The staphylococcus aureus bacteria is gram positive and *Pseudomonas* bacteria is gram negative.

Sample 1 is *Jasminum auriculatum* extract and Sample 2 is *plumeria alba*.

Table 1: Results of phytochemical screening on *jasminum auriculatum* and *plumeria alba*

Sr. No.	Chemical Constituents	Tests	Methanolic extract of <i>jasminum auriculatum</i>	Methanolic extract of <i>Plumeria alba</i>
1	Alkaloids	Wagner's test	Present	Present
2	Carbohydrates	Fehling's test	Absent	Absent
3	Flavanoids	NaOH test	Present	Present
4	Tannins	FeCl <sub>3</sub> test	Absent	Absent
5	Phenol	Gelatin test	Absent	Absent
6	Protein	HNO <sub>3</sub> test	Present	Present
7	Gum/Mucilage	Ruthenium red test	Absent	Absent
8	Steroids	Sulphuric acid test	Absent	Absent
9	Glycosides	Lead acetate test	Present	Present
10	Saponins	Froth test	Absent	Absent
11	Fats and oils	Solubility test	Absent	Absent
12	Polyphenols	Lead acetate test	Present	Present
13	Terpenoids	Salkowski test	Absent	Absent
14	Resins	Acetic anhydride test	Absent	Absent
15	Coumarins	NaOH test	Present	Present

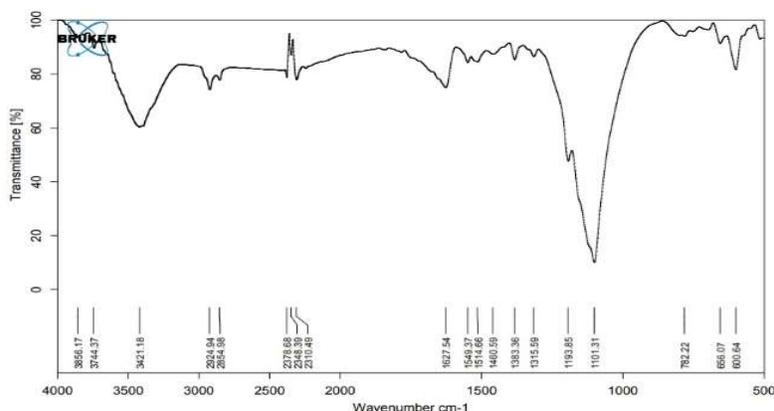


Figure 1: IR analysis of *Jasminum auriculatum* extract

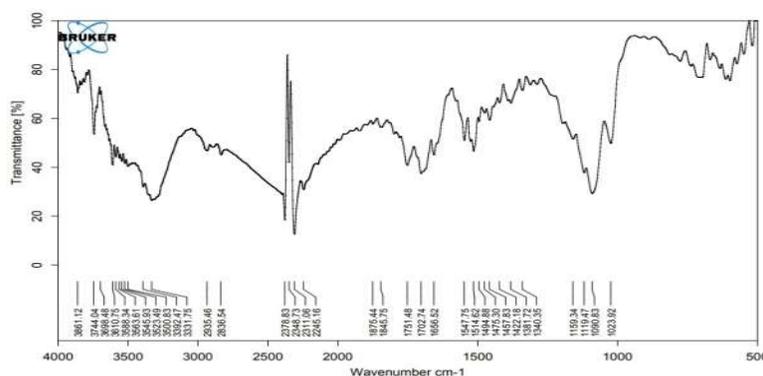


Figure 2: IR analysis of *plumeria alba* extract

Table 2: Results of Antibacterial activity

Sr. No.	Extract	<i>Staphylococcus aureus</i>	<i>Pseudomonas</i>
1	Sample 1	14mm	12mm
2	Sample 2	13mm	11mm
3	Standard (Ampicillin)	6mm	8mm

**CONCLUSION:**

We were successful in the isolation of fragrance from the methanolic extract for *Jasminum auriculatum* and *plumeria alba* by leaching process. *Jasminum auriculatum* and *plumeria alba* extracts show good antibacterial activity. The FT-IR spectroscopy studies show different characteristic peak values with many functional groups present. Phytochemical studies carried out to find functional groups present in the extract of *Jasminum*

*auriculatum* and *plumeria alba* & found good results.

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