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CONFINEMENT OF INCENSE, ANTIMICROBIAL & PHYTOCHEMICAL STUDY OF *JASMINUM SAMBAC* & *HYMENOCALLIS LITTORALIS*

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ABSTRACT

The objective of this study was to extract fragrance from *Jasminum sambac* and *Hymenocallis Littoralis* to test its phytochemical composition. Numerous investigations have been conducted to identify the aroma of jasmine flowers. Floral volatiles have attracted a lot of attention since ancient times. In fact, they are frequently used in medications, flavorings, and cosmetics. The ecological interactions between flowers and other flora and animals, including diseases, florivores, and pollinators, are what they are largely used for. A biological screening was done on *Staphylococcus aureus*, *Bacillus*, *Pseudomonas* and *E. coli* to evaluate any potential antibacterial effect. To ascertain whether the extract of *Jasminum sambac* and *Hymenocallis Littoralis* had any possible functional groups, phytochemical studies were conducted. IR findings support the probable functional groupings found in *Jasminum sambac* and *Hymenocallis Littoralis*.

Keywords: Fragrance, distillation, extraction, leaching, phytochemical test, FT-IR analysis

INTRODUCTION

The Indian Ayurvedic healthcare system, a method of natural medicine that blends spiritual, intellectual, and pragmatic components, has frequently relied heavily on essential oils. It is unknown how long Ayurvedic **[1, 2]**. medicine has existed. We know that it has been practiced for at least 5000 years and is still widely used in India

today. A key principle is aromatherapy massage. In Ayurvedic literature from 2000 BC, Indian doctors are depicted as administering oils like cinnamon, ginger, myrrh, coriander, camphor, and sandalwood to their patients. Since the beginning of time, *Jasminum sambac* and *Hymenocallis littoralis* have been utilized in rituals, cosmetics, perfumes, medications, and aromatherapy. There are also many varieties of garden roses that are bred more for color and shape than for fragrance**.** Ayurveda, Siddha, and Unani are all traditional medical systems that used the ligneous herb *Jasminum sambac* **[3, 4]**. Fragrances of a certain caliber that are used as ingredients in mouthwash liquids, soap, and cosmetics. They are also useful for aromatherapy, ulcers, stomatopathy, leprosy, hyperpiesia, disinfectant, moisturizers and skin disorders. In the context, current trend of research has shifted towards medicinal plants because of their affordability and accessibility with lesser side effects **[5]**. It has long been recognized that scents like perfume and air fresheners have an impact on a person's psycho-physiological processes, and as a result, the cosmetic and pharmaceutical sectors are beginning to recognize this influence more and more **[6]**. A unique mixture of low-molecular-weight volatile compounds, such as terpenes, phenylpropanoids and fatty acid derivatives make up the composite characteristic known as flower fragrance **[7]**. The flower displayed the efficacy to suppress puerperal lactation **[8]** and the essential oil was determined to possess antibacterial activity **[9]**. Researchers discovered that this species has suppurative, skin disease, thermogenic, urolithiasis, ulcers and wound healing capabilities. In recent years, with the increasing environmental concern, consumers are changing their habits and are actively looking into the quality of the products they use daily. They are much more conscious in the composition of the perfume and are seeking for organic and natural product which would be utilized in day to day life **[10]**. The current study highlights the plant's numerous traditional and ayurvedic uses as well as pharmacogenetic, phytochemical and pharmacological investigations as well as its untapped potential. The effect of the alcoholic extract was greater than that of the aqueous extract. Traditional medicine is a rich source of potentially helpful chemicals for the development of chemotherapeutic drugs **[11]**. To study species changes in headspace chemical composition at different times of the day in Anthurium hybrid UH0188 was chosen because of its overall lower quality in addition

to emitting a relatively strong sweet and soral fragrance all day **[12]**.

MATERIALS AND METHODS

Extraction: Many different sorts of experiments were performed for this aim, as shown below:

Method of extract fragrance from *Jasminum sambac Hymenocallis Littoralis* Traditional techniques such as distillation, Soxhlet extraction, direct drying beneath sunshine with adsorbent, and other methods were used to investigate the extraction of scent from *Jasminum sambac* and *Hymenocallis Littoralis* petals. It was found that none of the aforementioned techniques for adding scent could be extracted. Later, we tried the leaching process at room temperature, and the results were actually good. A chemical reaction called leaching takes place that happens when a product is exposed to a solvent. 100 ml of isopropyl alcohol was poured to a 100 ml round-bottom flask along with 20 grams of *Jasminum sambac* and petals. RBF was firmly sealed with grease and Teflon. Two days later, the fragrance was noticed. Our aim was accomplished, and we acquired aroma and the same method was used for leaching during the process for *Hymenocallis Littoralis*.

The stem isopropyl alcohol extract was taken. Using CHCl3 : isopropyl alcohol as a solvent, this resulted in a spot-on TLC. Using isopropyl alcohol as eluents and collecting fractions, a crude separation of isopropyl alcohol soluble extract was carried out. TLC was used to examine all of these fractions. Visualize the spots on UV light in short wavelength. There is silica gel in a stationary phase, the extract of *Jasminum sambac* and *Hymenocallis Littoralis* was done for TLC with 1 ml of chloroform and 9 ml of methanol to create the mobile phase.

Detection Method: By using phytochemical screening and IR analysis, it is possible to confirm that the functional groups found in *Jasminum sambac* and *Hymenocallis littoralis* are responsible for the aroma.

RESULTS AND DISCUSSION:

Phytochemical screening: The phytochemical screening for extract of *Jasminum sambac* and Hymenocallis *Littoralis* were tested for the presence or absence of alkaloids, carbohydrates, flavonoids, tannins, phenols, glycosides, saponins, fats and oils, terpenoids, resins, polyphenols, gum and mucilage, steroids, and coumarins. The results are shown in **Table 1**.

FT-IR Analysis: The electromagnetic spectrum's infrared region is used by IR spectroscopy to measure how much light a substance absorbs in this range. To absorb light, a molecule's bond must be able to

produce a dipole moment which means that electrons within the bond are not distributed uniformly.

IR spectra of *Jasminum sambac* extract showed frequencies (cm-1) at 3700-2900(broad), 3341.84, 2971.25, 1648.18, 1465.53, 1379.93, 1160.16, 1126.97, 948.88, 815.53. IR spectra of *Hymenocallis Littoralis* extract showed frequencies (cm-1) at 3347.63(broad), 2970.71, 1379.26, 1159.99, 1127.57, 949.18, 815.49 which indicates Alcohols, Alkanes, Ketones, Alkenes, Etheral C-O Bond, Aldehydes, Benzene & its Derivatives respectively. Jasminum sambac & *Hymenocallis littoralis* extract IR analysis data graph is shown in **Figure 1 & 2**.

Antimicrobial Activity: A biological test that uses bacteria is known as a bacterial analysis. The biological testing for bacteria compares the inhibition of bacterial growth caused by a conventional antibiotic formulation with non-steroidal antimicrobial agent action to that produced by a lack of concentration of the component extract. Using a disc plate, the bacterial assay can be carried out in a number of different methods **[13, 14]**. The study used the following bacterial strains.

1. *Staphylococcus aurous*
2. *Escherichia coli*
3. *Bacillus*
4. *Pseudomonas*

The Parul Institute of Applied Science's microbiology section provided the bacterial culture. Nutrient agar was the growing medium for the microorganisms. The antibacterial activity was discovered using the isopropyl alcohol extracts. The disc-plate method was used to investigate the antibacterial research.

The *Staphylococcus aureus* and *Bacillu*s both bacteria are gram positive

The *Escherichia coli* and *Pseudomonas* both bacteria are gram negative.

Table 1: Results of phytochemical screening on *Jasminum Sambac* and *Hymenocallis littoralis*

Sr. No.	Chemical Constituents	Test	Isopropyl alcoholic Extract *Jasminum sambac*	Isopropyl alcohollic Extract *Hymenocallis littoralis*
1	Alkaloids	Wagner's test	Present	Present
2	Carbohydrates	Fehling's test	Absent	Absent
3	Flavanoids	NaOH test	Present	Present
4	Tannins	$FeCl_3$ test	Absent	Absent
5	Phenol	Gelatin test	Absent	Absent
6	Protein	HNO_3 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

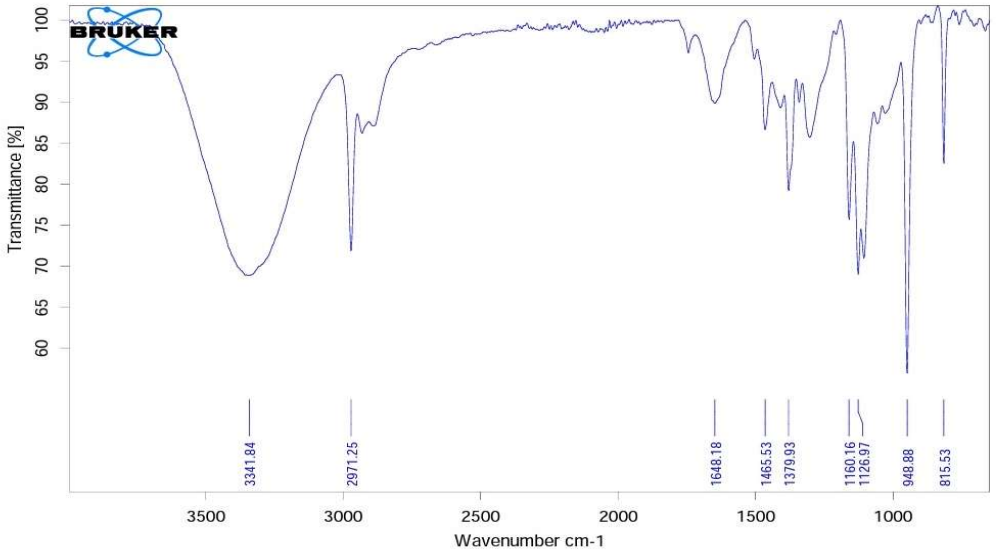

Figure 1: IR analysis of *jasminum sambac* extract

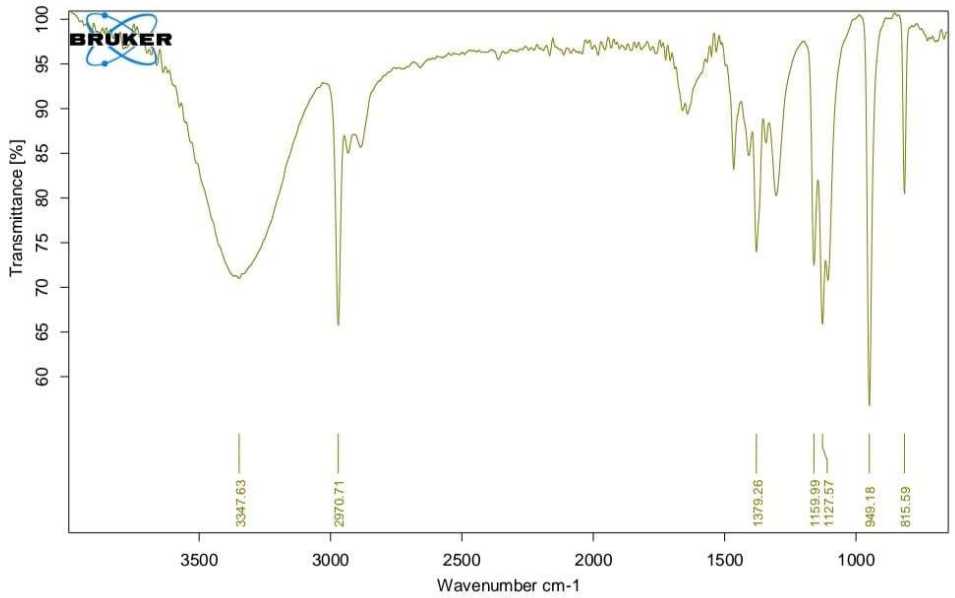

Figure 2: IR analysis of *Hymenocallis littoralis* extract

Table 2: Results of Antibacterial activity

Sr. No.	Extract	*Staphylococus aureus*	*Bacillus*	*Escherichia coli*	*Pseudomonas*
1.	Sample 1	12 mm	14 mm	12 mm	13 mm
2.	Sample 2	13 mm	12 mm	14 mm	11 mm
3.	Standard (Ampicillin)	8mm	6mm	8mm	8mm

CONCLUSION

Hymenocallis littoralis and *Jasminum sambac* aromas were extracted using a safe and effective leaching procedure. Both *Hymenocallis littoralis* and *Jasminum sambac* exhibit potent antibacterial properties against *Staphylococcus aureus, Bacillus, E. coli & Pseudomonas* strains in accordance to standard ampicillin. Humanity will benefit from this since deodorants and perfumes with antimicrobial properties will destroy microorganisms that cause body odor and perspiration. The FT-IR spectroscopy studies exhibit a variety of peak values with numerous functional groupings. The functional groups included in the extract of *Jasminum sambac* and *Hymenocallis littoralis* were determined using phytochemical studies and the findings were promising.

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