

# Antimicrobial Activity of Perfumes or Plant Scents against Bacteria Isolated from Gallbladder Patients

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**Abstract**—Plant scents or plant perfumes is a mixture of fragrant essential oils and aroma compounds, fixatives, and solvents. Antifungal properties of some perfumes have been studied [1] but the antibacterial properties are not much evident. One clinical/medical application of scents is as an alternative to chemical synthetic, not only as antimicrobial but also as mood enhancing agents useful in psychology and psychiatry [2]. A century of research and evaluation has confirmed that scents are effective antimicrobial agents and that they are without the unpleasant side effects associated with medical antibiotics [3]. They assist the elimination of toxins at the cellular level and are antimicrobial and antiseptic not only by their direct activity but also by strengthening the body's own immune system [4]. Microbes build little or no resistance to scents, perhaps because scents are the natural defense mechanism of the plant [5]. In present study scents are also used which are purchased from Itra - Bhandar, gwalior. Some past and recent researches inspire for to check the antimicrobial activity of scent against bacteria.

**Index Terms**— Itra (scents), Inhibition zone, E.coli, Klebsiella, Streptococcus, Efficacy.

## I. INTRODUCTION

Aroma chemical (scents) are multifunctional in that many have antimicrobial action besides contributing to the fragrance and/or flavor of products in which they are used [6]. In view of the antimicrobial properties of scents, is reasonable to suggest that the selection of fragrances for drug products be based not only on the desired scent but also upon its inherent germicidal properties [7]. Aroma chemicals with antimicrobial properties may be used to reduce or replace chemical preservatives in products and may be considered to be a part of preservative system [8].

## II. MATERIALS AND METHODS

**Antimicrobial activity of scents (Itra):** A new therapy that is aromatherapy originate in new world for the treatment of infectious diseases. In recent some herbal scent are used for the treatment of bacterial diseases.

TABLE I  
LIST OF SCENTS USED IN THE STUDY

| Code | Common name | Botanical name                | Family        |
|------|-------------|-------------------------------|---------------|
| I-1  | Chameli     | <i>Jasminum officinarum</i>   | Oleaceae      |
| I-2  | Lavender    | <i>Lavendula officinalis</i>  | Lamiaceae     |
| I-3  | Khas        | <i>Vetiveria zizanioides</i>  | Poaceae       |
| I-4  | Ratrani     | <i>Cestrum nocturnum</i>      | Solanaceae    |
| I-5  | Bela        | <i>Clematis grata</i>         | Ranunculaceae |
| I-6  | Gendha      | <i>Tagetes patula</i>         | Asteraceae    |
| I-7  | Kewra       | <i>Pandanus odoratissimus</i> | Pandanaceae   |
| I-8  | Champa      | <i>Michelia champaca</i>      | Magnoliaceae  |
| I-9  | Heena       | <i>Lawsonia inermis</i>       | Lathyraceae   |
| I-10 | Mongra      | <i>Jasmine sambac</i>         | Oleaceae      |
| I-11 | Gulab       | <i>Rosa damascena</i>         | Rosaceae      |
| I-12 | Sandel      | <i>Santelum album</i>         | Santelaceae   |

## III. RESULTS

During the study the antimicrobial activity of the some plant

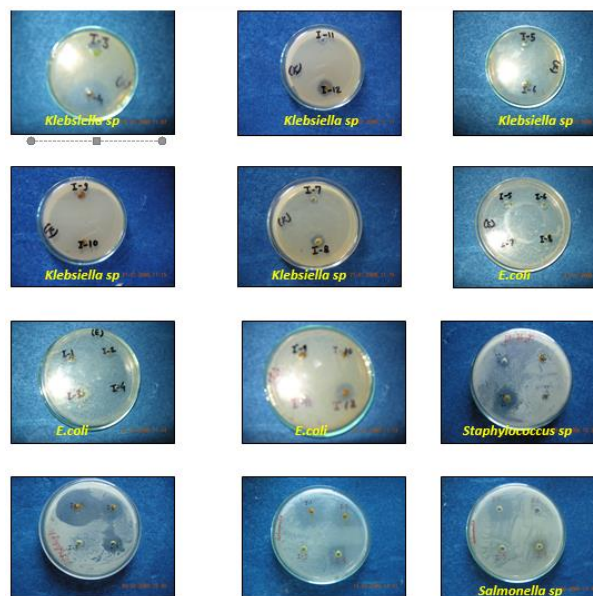


Fig. 1. Result

TABLE I  
 INHIBITION ZONE DIAMETER OF SCENTS (ITRA)

| S.No. | Scents (Itra)                  | E.coli  | Klebsiella sp. | Salmonella | Streptococcus | Staphylococcus sp. |
|-------|--------------------------------|---------|----------------|------------|---------------|--------------------|
| 1     | A. <i>Jasminum officinarum</i> | 32 m.m. | 15 m.m.        | 26 m.m.    | 35 m.m.       | 38 m.m.            |
| 2     | <i>Lavendula officinalis</i>   | 17 m.m. | 12 m.m.        | 24 m.m.    | 32 m.m.       | 26 m.m.            |
| 3     | <i>Vetiveria zizanioides</i>   | 0       | 0              | 0          | 38 m.m.       | R                  |
| 4     | <i>Cestrum nocturnum</i>       | 26 m.m. | 12 m.m.        | 18 m.m.    | 24 m.m.       | 24 m.m.            |
| 5     | <i>Clonatis grata</i>          | 17 m.m. | 13 m.m.        | 19 m.m.    | 26 m.m.       | R                  |
| 6     | <i>Tagetes patula</i>          | 21 m.m. | 15 m.m.        | 0          | 15 m.m.       | R                  |
| 7     | <i>Pandenus</i>                | R       | 0              | 0          | R             | R                  |
| 8     | <i>Michelia champaca</i>       | 10 m.m. | 11 m.m.        | 10 m.m.    | 0             | R                  |
| 9     | <i>Lawsonia inermis</i>        | 18 m.m. | 0              | 0          | 17 m.m.       | 0                  |
| 10    | <i>Jasmine sambac</i>          | 15 m.m. | 0              | 0          | 0             | 0                  |
| 11    | <i>Rosa damascena</i>          | 11 m.m. | R              | 11 m.m.    | 0             | R                  |
| 12    | <i>Santalum album</i>          | 14 m.m. | 15 m.m.        | 19 m.m.    | 12 m.m.       | 24 m.m.            |

R=Resistant (<10 mm)

scents (Itra) against test bacteria is also analysed. 12 types of scents are taken, among these scent Chameli (*Jasminum officinarum*), Lavender (*Lavendula officinalis*), Ratrani (*Cestrum nocturnum*) and Sandal (*Santalum album*) shows very good activity (ranges of zone diameter from 12m.m. to 38 m.m.) against all types of test bacteria (positive and negative) but Kewra (*Pandenus* sp.), Khas (*Vetiveria zizanioides*) and Mongra (*Jasmine sambac*) shows no activity/least activity (no zone formation) against test bacteria. *Staphylococcus* sp. is more resistant to all scents and *E.coli* and *Klebsiella* sp. are very sensitive to all of the plant scent.

#### IV. DISCUSSION

Scents of Chameli, Ratrani, Lavender, Bela, Genda and Sandel

are not shows satisfactory results against test bacteria. Lavender scent are least effective in some studies (9). But in present study among the 12 scents tested, Chameli, Ratrani, Lavender, Bela, Genda and Sandel showed the highest activity. Gram negative bacteria known to be more susceptible to scents than gram positive bacteria. *Staphylococcus* sp. was least susceptible to the scents. *E.coli* was the most susceptible microorganism to the Chameli. The most susceptible bacteria to Lavender was *Streptococcus* sp (32 m.m.) and most resistant was *Klebsiella* sp (12 m.m.). The most susceptible bacteria to Ratrani was *E.coli* (26 m.m.) and most resistant was *Klebsiella* sp.(12 m.m.). The most susceptible bacteria to Bela was *Streptococcus* sp. (26 m.m.) and most resistant was *Staphylococcus* sp.(0.0 m.m.). The most susceptible bacteria to Genda was *E.coli* (21

m.m.) and most resistant was *Staphylococcus* sp.(0.0 m.m.). The most susceptible bacteria to Sandel was *Staphylococcus* sp. (24 m.m.) and most resistant was *Streptococcus* sp.(12 m.m.). Khas and Kewra are least effective against test bacteria.

**Efficacy of scents against bacteria**

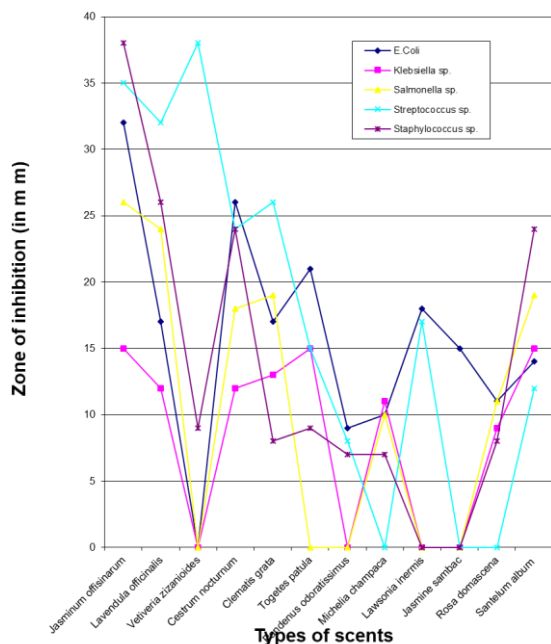


Fig. 2. Efficacy of scents against bacteria

**V. CONCLUSION**

Plant scents are also active against gram positive and gram-negative bacteria, these are also used in aromatherapy of GB patients.

**REFERENCES**

- [1] F.Bakkali,S.Averbeck,Biological effects of perfumes :A review.Food chem.toxicol,46,446-475(2008).
- [2] N.Rusenova and P.Parvanov,Antimicrobial activities of 12 perfumes against microorganisms.Sci.,37-43(2009).
- [3] M.Oussalah,S.Caillet,LSaucier and M.Lacroix ,inhibitory effects of selected plants scents on the growth of four pathogenic bacteria,18,414-420(2007).
- [4] D.C.Eileen,understanding true aromatherapy:pract,16 474-479(2004).
- [5] A.I.Sow,D.koyalta,Antibacterial activity of kewra scent med13,235-244(1998).
- [6] G.Buchbauer,methods in aromatherapy research.perfume flavorist,21,31-36(1996).
- [7] D.C.Mckay and J.Blumberg,Areview of the bioactivity and potential health benefits of lavender scents,20,519-530(2006).
- [8] G.Cheng and K.YI,study on the antimicrobial activities of the Tagetes,102,1318-1321(2006).
- [9] C.F.Carson,B.J.Mee and T.V.Riley,mechanism of action of khas,gulab and sandal,46,1914-1920 (2002).