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## RESEARCH ARTICLE

### ANTIMICROBIAL ACTIVITY OF ESSENCES AGAINST ISOLATED FROM GALLBLADDER SAMPLES

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#### ABSTRACT

Comparison between results reported about antibacterial effects of different essences is very difficult, that differences in various methods for evaluating of antibacterial effects of different essences, resources of essences and different genus of used bacteria are from its reasons. Various studies has been performed about antibacterial effects of essences of herbal belong to Lamiaceae family and some of important compound in essences of this family among Carvacrol and Thymol (Almas, 1999). In present study, these essences are used against test bacteria, which were isolated from GB patients (Cholecystitis, Cholangitis, GBC).

**Key words:** Herbal essences, Inhibition zone, Minimal inhibitory concentration.

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#### INTRODUCTION

In the study performed by (Alzoreky and Nakahara, 2003) antibacterial effects and calculation of minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) of Carvacrol on *Salmonella typhi*. Murium and its Rifampicin-resistant genus in Tryptic Soy Agar medium (using paper discs smeared with Carvacrol's different concentrations and determining the region of growth inhibition) and in Tryptic Soy Broth (according to measurement of growth tannish by spectrophotometer in 540 nanometer wavelength and then culture on Tryptic Soy Agar) have been executed. They showed that Carvacrol has forceful antibacterial effects against both genres with 250- $\mu\text{g mL}^{-1}$  MIC. In this research Carvacrol with 3% concentration in 1% Tween 20, showed powerful bactericidal effect against Rifampicin-resistant genus in a sample of GB patients. In another study, Karman *et al.*, 2004 showed powerful bacteriostatic effect of *Thymus revolutus* essence on gram-positive bacteria among *Staphylococcus sp.* They illustrated high amount of Carvacrol in essences as possible reason of this effects. Similar study by (Bauer and Kirby, 1966) about bactericidal effects of *Thymus pubescens* essence (With high amount of Carvacrol) on gram positive bacteria, *Staphylococcus aureus*, gram negative and *E.coli* was executed and like previous study, high amount of Carvacrol in essence was mentioned as reason of powerful bactericidal effect of studied essence. Similar results by (Shahidi, 2004), was obtained, in study about effects of Thyme and compounds of carvacrol and Thymol on *Shigella sonnei* and *Shigella flexneri*. According to obtained results from this research and

increasing limitations of chemical antimicrobial usage like side effects and drug resistance, there is need to replacement of these substances with natural essences and this issue can pave the way for studies about replacement of mentioned substances, to preserve alimentary substances and controlling of human's diseases.

#### MATERIALS AND METHODS

Herbal essences are also used in treatment of bacterial diseases, which are purchased from departmental store, Gwalior. Generally the essences are least effective against test bacteria except *Salmonella sp.*, *E.coli*, *Klebsiella*, *Streptococcus sp.* and *Staphylococcus sp.* are resistant against these essences.

#### RESULTS

In the later part of our study, plant essences are used which are not effective against test bacteria except *Salmonella sp.* *Staphylococcus sp.* shows very good resistance power (<10mm) against plant essences and *Salmonella sp.* shows good sensitivity to plant essences. In current study, herbal essences shows no inhibition zone against *E.coli*, *Klebsiella sp.*, and *Streptococcus sp.* but different range of zone of inhibition shows by essences against *Salmonella sp.*, such as *Vanilla planifolia* (12 mm), *Ananas sativum* (11 mm), *Citrus reticulata* (11 mm), *Fragaria sp.* (12 mm), *Mangifera indica* (10 mm), *Rubus idaeus* (12 mm), *Crocus sp.* (10 mm), *Pandanus odoratissimus* (10 mm), *Rosa damascena*.

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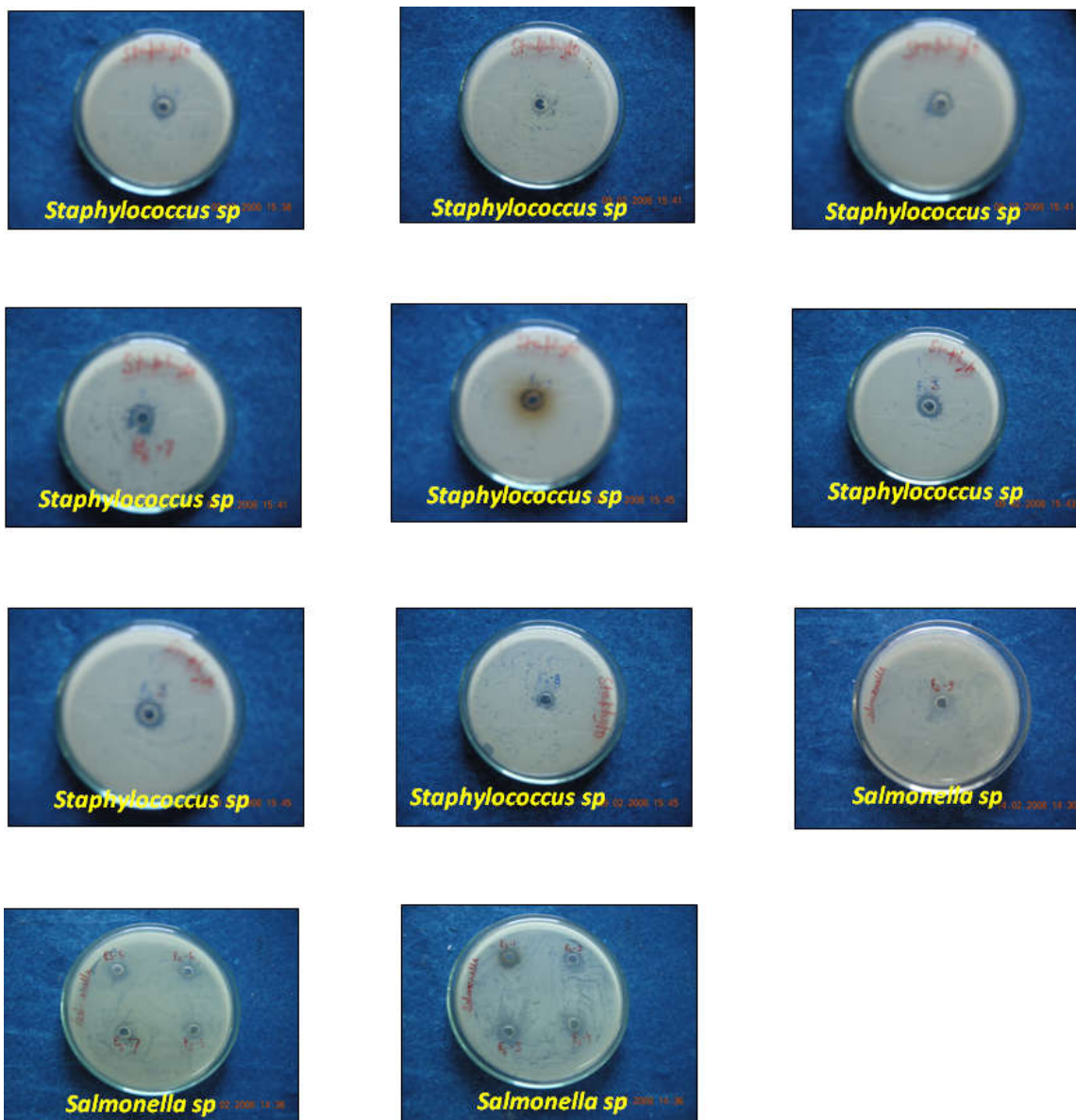
**Table 1. List of herbal essences used in present study**

Code	Common name	Botanical name	Family
Es-1	Vanilla	<i>Vanilla planifolia</i>	Orchidaceae
Es-2	Pineapple	<i>Ananas sativum</i>	Bromeliaceae
Es-3	Orange	<i>Citrus reticulata</i>	Rutaceae
Es-4	Strawberry	<i>Fragaria sp</i>	Rosaceae
Es-5	Mango green	<i>Mangifera indica</i>	Anacardiaceae
Es-6	Raspberry	<i>Rubus idaeus</i>	Rosaceae
Es-7	Kashmiri kesar	<i>Crocus sp.</i>	Irideae
Es-8	Kewra	<i>Pandanus odoratissimus</i>	Pandanaceae
Es-9	White rose	<i>Rosa domascena</i>	Rosaceae

**Table 2. Inhibition zone diameter of essences against test**

S.no	Essences	E.coli	Klebsiella sp.	Salmonella sp	Streptococcus sp.	Staphylococcus sp.
1	<i>Vanilla planifolia</i>	0	0	12 m.m.	0	R
2	<i>Ananas sativum</i>	0	0	11 m.m.	0	R
3	<i>Citrus reticulata</i>	0	0	11 m.m.	0	R
4	<i>Fragaria sp</i>	0	0	12 m.m.	0	R
5	<i>Mangifera indica</i>	0	0	10 m.m.	0	R
6	<i>Rubus idaeus</i>	0	0	12 m.m.	0	R
7	<i>Crocus sp.</i>	0	0	10 m.m.	0	0
8	<i>Pandanus odoratissimus</i>	0	0	10 m.m.	0	R
9	<i>Rosa domascena</i>	0	0	R	0	R

R=Resistant (<10 mm)



**Fig. 1.**

### Efficacy of Herbal essences against bacteria

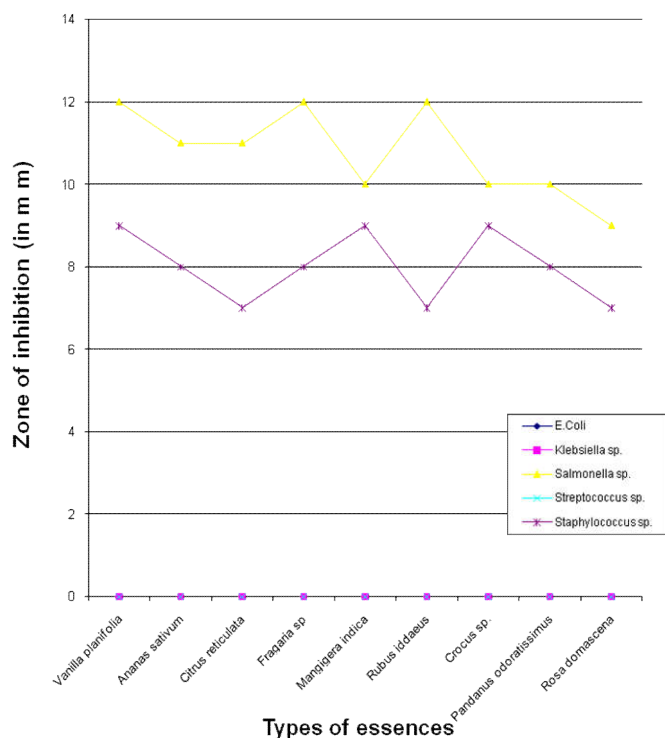


Fig. 2.

### DISCUSSION

In the later part of our study, plant essences are used which are not effective against test bacteria except *Salmonella sp.* *Staphylococcus sp.* shows very good resistance power (<10m.m.) against plant essences and *Salmonella sp.* shows good sensitivity to plant essences. In current study, herbal essences shows no inhibition zone against *E.coli*, *Klebsiella sp.* and *Streptococcus sp.* but different range of zone of inhibition shoes by essences against *Salmonella sp.* such as *Vanilla planifolia* (12 mm), *Ananas sativum* (11 mm), *Citrus reticulata* (11 mm), *Fragaria sp* (12 mm), *Mangifera indica* (10 mm), *Rubus idaeus* (12 mm), *Crocus sp* (10 mm), *Pandanus odoratissimus* (10 mm), *Rosa domascena* (<10m.m.).

Previous studies showed *Vanilla planifolia* and *Rubus idaeus* are very effective against test organisms (Takarada and Kimizuka, 2004). *Fragaria sp* is least effective against bacteria (Parekh and Chanda, 2007). *Ananas sp* and *Pandanus sp* are not effective against selected gram positive and gram negative (Koo *et al.*, 2000). *Crocus sp* showed good response against gram negative bacteria (Mothana and Abdu, 2008). *Rosa domascena* showed very good activity against all types of microorganisms (Muangsan and Senamontee, 2008).

### Conclusion

In current study essences are used which are least effective, so we can use plant essences in diet of GB patients and these also used in syrups to treat infection in GB.

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