ABSTRACT

A herbal handwash was prepared using extracts of leaves of *terminalia beherica*, *Glycyrrhiza glabra*, rind of *Garcinia indica choisy*. The antibiotic sensitivity test of the prepared herbal handwash against skin pathogens was checked using disc diffusion method & results were compared with the commercially available antiseptic soap. The results showed that the herbal handwash gave the significant inhibition zone than the commercial antiseptic soap against Staphylococcus aureus & Pseudomonas aeruginosa. So these plant materials can be used in the preparation of herbal handwash on commercially scale.
INTRODUCTION:
Skin being the most exposed part of our body requires protection from skin pathogens nosocomial. The hands of Health Care workers (HCWs) are the primary routes of transmission of multidrug resistant pathogens and infection to the patients. Hence, It brings up the use of antiseptic for hand wash purpose. Many of the chemical antiseptics are now available in market as alcohol based sanitizers, chlorhexidine products etc. These soaps or solutions help to reduce health care associated transmission of contagious diseases more effectively but they have some shortcomings or adverse effects. Their frequent use can lead to skin irritation and also resistant among pathogens. Organisms such as Staphylococcus aureus, Pseudomonas spp., Klebsiella pneumonia & Proteus vulgaris are some of the causative agents of the skin infections. Historically, plants have provided a good source of antiinfective agents. plant based antimicrobials represent a vast untapped source for medicines. They are effective in the treatement of infectious diseases while simultaneously mitigating many of the side effects that are often associated with synthetic antimicrobials. Plants containing flavonoids and polypeptides used in traditional medicine have been found to be active against a wide variety of microorganism.

*Terminalia belerica:*-They are used as astringent and antioxidant. It is the major sources of tannins. Its oil is used for *the manufacture of soap.*

*Glycyrrhiza glabra:*-They are rich in phytochemicals and reported to contain flavonoids, isoliquiritins,sapponins.

*Garcinia indica choisy:*-It is commonly known as Kokam are rich in organic acids mainly hydroxycitric acid and other component garcinol. It also contains in minute quantities of malic acid ,citric acid,tartaric acid.

MATERIALS AND METHODS:--
The following herbs were authenticated and then parts of the herbs were used for the extraction *Terminalia belerica, Glycyrrhiza glabra, Garcinia indica choisy.* The pathogens were recovered from the hands of HCWs.Amongst the isolated pathogen Staphylococcus aureus & Pseudomonas aeruginosa were selected for the study. Methanol extract of the plant materials was prepared and further used for the preparation of handwash.
EXPERIMENTAL:

10 g of each plant materials were added separately to 100 ml of methanol solutions (9 parts methanol: 1 part water) This mixture was heated in water bath at 60°C for 60 minutes. The contents were filtered and the filtrate was used as methanol extract.

The herbal handwash was prepared by adding 4 ml of the methanol extract of combined plant materials in 6 ml of distilled water. To the final volume of 10 ml, 3 g of sodium lauryl sulphate (SLS) was added as per the requirement of standard procedure for preparation of handwash. The solution was made homogenous under room temperature and used for the antibacterial screening.

The screening of antibacterial sensitivity of the plant extracts against pathogens was performed using disc diffusion method. Test cultures were used *S. aureus* and *P. aeruginosa*. Sterile filter paper discs of 6 mm were loaded with 10 ul of the herbal handwash. It was taken care that the sterile discs completely absorb the handwash. In similar ways, discs of commercial antiseptic soap and SLS were prepared. The Discs, when completely dried where placed on solidified Nutrient Agar Medium inoculated with the test cultures.

RESULT:

The results of disc diffusion method showed that the handwash prepared from methanol extract of the combined plant materials had significant activity than the activity of the commercially available hand sanitizer. Disc of SLS was also maintained as control. The zone size obtained for SLS disc showed that the antibacterial activity of herbal handwash is not solely due to the use of 30% SLS but the result of combined activity of active components. The average result of 10 experiments is presented in table 1 with standard deviation.

### Table 1: Antibiotic sensitivity result of herbal handwash, standard soap and SLS

<table>
<thead>
<tr>
<th>Organisms</th>
<th>Zone of inhibition in mm</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Herbal handwash</td>
<td>Standard soap</td>
<td>SLS</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>11±2</td>
<td>14±2</td>
<td>16±2</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>9±1</td>
<td>No inhibition</td>
<td>No inhibition</td>
</tr>
</tbody>
</table>

DISCUSSION:

The results prove that the herbal soap thus prepared are as active as the commercial antiseptic soap. The main ideology behind combining the plant materials is to observe the additive effect of the active constituents of different plants. The combination proves to be beneficial and hence it is used in the preparation of a herbal handwash, hence a new way can be found to combat antibiotic resistance of pathogenic organisms and provide safe and healthier living through germfree hands. Although the removal is not 100% but a major number can be reduced.
CONCLUSION:
The results suggest that the constituent of the various extracts of *Terminalia belerica*, *Glycyrrhiza glabra*, *Garcinia indica choisy* are capable of giving superior inhibition as the commercially available antiseptic soaps against skin pathogens. Thus the use of these materials in making of antiseptic soaps in place of chemicals.

REFERENCES: