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Formulation and Evaluation of Herbal Hand wash Gel from *Hyptis suaveolens* Flowering-tops

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ABSTRACT

The main objective of this present work is to formulate and evaluate herbal hand wash in order to make a formulation that has less side effects and has better cleaning of hands using the ethanol extract of the flowering-tops (flower, including the stems, leaves and blooms) of plant *Hyptis suaveolens*. The prepared formulation was evaluated by different parameters like organoleptic properties, physico-chemical parameters along with the antibacterial test. The formulated hand wash was found to be good in physical parameters with good cleaning of hands.

Keywords: *Hyptis suaveolens*, Ethanol, flowering-tops, organoleptic, Antibacterial.

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INTRODUCTION

Hyptis suaveolens (Family: Lamiaceae) as an aromatic plant. It is common plant found in wasteland of North East India, Andaman and Nicobar Island, Deccan Peninsula. The plant internally used as a carminative, sudorific, galactagogue, stimulant, in infection of uterus, antiseptic, antispasmodic, antirheumatic, headaches and for treatment of cancer (Anonymous, 2001; Chopra RN et al., 1986; Rastogi R., 2001). The antimicrobial activity of seed oil from *Hyptis suaveolens* plant reported earlier (Bachheti RK., et al., 2015). The various Steam distillation, petroleum ether, and ethanol extracts from *Hyptis suaveolens* leaves were also evaluated for their antimicrobial activity in vitro (Pati BR., et al., 2007). The essential oil from leaves of *Hyptis suaveolens* also evaluated for its antifungal activity (Moreira, ACP., et al., 2010).

As the plants leaves and seed already proven the antibacterial activity so hypothesis was made that, flowering-tops (flower, including the stems, leaves and blooms) of *Hyptis suaveolens* may be used for formulation of hand-wash. Because in hand-wash formulation we require such ingredient which kills the bacteria and fungi present on palm of hand. Finally, the aim draw in this study 'Formulation and Evaluation of Herbal Hand wash gel from *Hyptis suaveolens* Flowering-tops'

MATERIALS AND METHOD

Procurement of Plant Material

The flowering-tops (flower, including the stems, leaves and blooms) of *Hyptis suaveolens* was collected from 'Yeola' region, Maharashtra, India, in the month of Sep-Nov 2019. Botanical identification was carried out from Dravyaguna Department of Matoshri Asarabai Darade Ayurved College, Dist. Nashik, Maharashtra, India and voucher specimen of the plant material has been deposited at college level.

Preparation of Plant Material

Fresh flowering-tops of *Hyptis suaveolens* are shade dried and powdered was prepared by passing through sieve # 38, and kept in air tight polythene bags for further study.

Chemicals and Instruments

Solvents and reagents were procured from Research Lab-Fine Chem Industries, Mumbai, India. Some apparatus and other common glassware and instruments used for the study.

Extraction

The 150g flowering-tops powder of *Hyptis suaveolens* were extracted using ethanol. The Soxhlet's apparatus used for hot continuous extraction (6hrs) of plant material. After complete extraction the solvent was evaporated and concentrated to dry residue. % yield was calculated for ethanol extract after drying under vacuum. The final extract (15.35 g) obtained was used for further study.

Preparation of *Hyptis suaveolens* hand wash Gel

The herbal hand wash was prepared by mixing 4 ml of the suspended water extract (1.25g /4 ml w/v) to 3 g of sodium lauryl sulphate (Mashood AS., *et al.*, 2014) mix well, add 1ml of glycerin and then quantity sufficient to 100 ml (Table 1). The solution was mixed well, made homogenous under room temperature and further utilized for the screening of the activity. Blank hand wash was prepared as per the previous procedure without herbal extract.

Table 1: Formula for *Hyptis suaveolens* Herbal Hand wash Gel

Ingredient	Qty
<i>Hyptis suaveolens</i> Extract	1.25g
sodium lauryl sulphate (SLS)	3 g
Glycerin	1 ml
Perfume (Q.S.)	--
Distilled Water (Quantity Sufficient to)	100ml

Characterization of Herbal Hand Wash Gel

Organoleptic evaluation

The color, odor was done by sensory and visual inspection.

pH

The pH was determined by using digital pH meter (Physics Instrument Co., Pha01). The pH was determined by taking 50 ml of gel into the beaker of 100 ml capacity and the pH electrode is dipped into the gel and the pH has recorded.

Viscosity

The viscosity of herbal hand was determined by using digital Brookfield viscometer.

Spreadability Test

The spreadability test for formulated hand wash gel was carried out by placing a amount of gel in between two clean slides. Above the slides 1 kg weight is placed for better results. After 2 min the weight is removed and the diameter of gel spread was measured (Ghurghure SM., *et al.*, 2019).

Stability Studies

The stability of herbal hand wash gel was carried out by storing a measured amount of gel at different temperature i.e. 25°C, 37°C, 40°C, for 1 week. During stability studies no change in colour and no phase separation were observed in the formulated hand wash. Also the formulation withstands its activity (Ghurghure SM., *et al.*, 2019).

Irritability Test

The herbal hand wash gel was tested for irritability by applying it on left hand palm and washed off with water.

Antimicrobial Studies

The screening of anti-microbial efficacy of the formulated herbal hand wash gel was aseptically performed on *Bacillus subtilis* and *Staphylococcus aureus* by using Dip well Agar Diffusion Technique. A well was prepared in the plates (containing 15ml of Nutrient and MacConkey agar medium respectively for both bacteria's). 100µl of the test compound (herbal hand wash gel) was introduced into the well. The standard antibiotic discs like streptomycin were used as a standard. The plates were incubated overnight at 37°C. Efficiency of hand wash gel was determined by measuring the diameter of zone of inhibition (Ghurghure SM., *et al.*, 2019).

RESULTS AND DISCUSSION

The results of the organoleptic evaluation, pH, viscosity, spreadability test, stability studies and irritability test given in Table 2.

Table 2: Characterization of *Hyptis suaveolens* Herbal Hand Wash Gel

Test	Observation
Organoleptic evaluation	
Color -	Bright Green
Odor -	Pleasant
pH	6.3
Viscosity	51c Pascal's
Spreadability	2.38 cm
Stability	Stable
Irritability	Non irritant

Preliminary antimicrobial activity screening tests observations were shown in Table 3. *Hyptis suaveolens* herbal hand wash gel formulation proved to be beneficial with excellent activity against all the tested microorganisms. Against *Staphylococcus aureus* developed formulation '*Hyptis suaveolens* herbal hand wash gel' gives dominating results compare to standard. Our skin contains large numbers of micro organisms, mainly Gram-positive. *Staphylococcus aureus* is one of these natural flora, which is commonly found on the hands, face and in deep layers of the skin. *Staphylococcus aureus* is ubiquitous and is not easily washed and eliminated by routine washing and scrubbing even with some antiseptic soap (Cinco M., *et al.*, 1983).

Table 3: Antimicrobial Studies of *Hyptis suaveolens* Herbal Hand Wash Gel

Microorganism	Zone of Inhibition (mm)	
	Herbal Hand Wash Gel	Standard
<i>Bacillus subtilis</i>	20	14
<i>Staphylococcus aureus</i>	18	21

CONCLUSION

This preliminary *in-vitro* study demonstrated that *Hyptis suaveolens* herbal hand wash gel was as effective against pathogenic bacteria. It is an attempt made to establish the herbal gel based hand

wash containing *Hyptis suaveolens* extract. From the result we can say that the gel formulation is good in appearance, stable and acceptable. Finally it is concluded that this herbal gel hand wash provide an effective and safe alternative to existing marketed hand wash gels.

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