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Preparation and Evaluation of Aloe-Vera Handwash

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Abstract: *Hands are primary modes of transmission of microbes and infections Hand – washing is critical in food healthcare seeting home and day care preparation. handwash is used as daily life routine as sanitization that having many antibacterial activity of the handwash production of handwash that can be ingredient will be used such as cinaamon oil, glycerin , tea , perfume colouring agent methyl paraben , purified water q. s visible dirt from hands and reduced the number of harmful micro – organisms such as E .Coli and Salmonella can be carried by people animal or equipment's and transmitted to food.*

Keywords: Handwash.

I. INTRODUCTION

To protect the skin from harmful micro – organisms and to prevent spreding of many contagious diseases hand washing is absolutely an important precautions . aloe – vera handwash is suitable from the humas body, that having doesn't any type of side effects on body. That is prepared from the naturally

Preparation of aloe – vera is such available in soaps and handwash formulations for the preparation the aloe – vera handwash that is prepared a anti- microbial properties . the concepts of cleansing handwash with an antiseptics agent probley emergened in the early 19 th century , as early as 1822. In India handwash technique is developed by Abonidarnath Tagore , and Nandalal Bose . WHO has recommended all people should wash hands before during and after preparing food. the consumer is exposed following the ingestions of these microorganisms which may be causes gastrointestinal illness. Hand contact with ready – to – eat foods represents a very important mechanisms by which pathogens may enter the food supply . food handler whose works involves touching unwrapped foods to be consumed raw or without further cooking or other forms of treatment have been identified as a particular risk group .

Evalution of the antimicrobial activity of the against skin pathogens of the prepared herbal **handwash** was preformed using disc diffusion method .theherbal plant aloe vera of maximum of 100 cm in height in mature in 5 to 6 years . aloe vera is derived from arabic words 'Aloe' means **shinning bitter substance** and ' vera ' means **true** . it is used for host of purposes since the anicentsegypians called plant of immortality it is also none as ' Ghritkumari' in hindi. Aloe vera leaf is use for cure sunburns and skins disease . aloe vera is used to skin care like acane. Would healing and protect sunburn of skin.

II. MATERIAL

The menthol oil ,cinnamon oil, lavender oil, Eucalyptusoil, and nutmeg oil and methyl paraben, and hydroxy propyl methyl cellulose, , sodium lauryl sulphate, and glycerin

All other reagent / chemicals were used are analytical method .

2.1 Bacteria's

- **E.coli**
- **S.aureus**
- **salmonella**

2.2 Methods

Standardization of inoculum

The inocula prepared from the stock cultures were maintained on nutrient agar at 4 ^{0} C and sub cultured onto nutrient broth using a sterile wire loop .

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2.3 Antimicrobial Studies of Commercial Herbal Oils

The screening of anti – microbial efficiency of the herbal oils was performed on various micro organisms by using dip well method as per standard procedure . three sterile petri plate were taken for testing the antimicrobial activity of herbal oils against three different micro- organismsi.e E.Coli , staphylococcus , aureus and salmonella . the plate were filled with macconkey and mullerhinton agar solution and allowed for solidification . After solidification the micro-organisms from the subculture were inoculated into the neutrient agar media and five discs were inoculated with menthol oil, cinnamon oil, lavender oil, eucalyptus oil and nutmeg oil respectively. The plates were incubated at 37ºC for overnight. After 24 hours of incubation, the plates were observed for the zone of inhibition.

2.4 Determination of Minimum Inhibitory Concentration (MIC) of the Cinnamon Oil

The MIC is defined as the lowest concentration that completely inhibits the growth of microorganisms for 24 hrs incubation. Determination of minimum inhibitory concentration of Cinnamon oil was determined by preparing different concentrations of oil.1:20, 1:40, 1:60 1:80 and 1:100 were added respectively tothe nutrient broth (Fig 5). A 50µl volume of each dilution was added aseptically into the wells of Mueller Hinton agar plates that were already seeded with the standardized inoculums of the test bacteria. All experiments were performed in triplicate. The agar plates were incubated at 37°C for 24 hours. The lowest concentration of oil showing a clear zone of inhibition was considered as the MIC.

2.5 Formulation of Herbal Hand Wash Gel

Various herbal hand wash gel formulation batches were prepared. The desired concentration of gelling agent, foaming agent, emollient were measured accurately and dispersed in purified water with moderate stirrer speed. The required quantity of methyl paraben was dissolved in remaining quantity of purified water by gentle heating. Desired quantity of herbal oil, flavorent, colorant was added to the above formulation. Triethaanolamine was added to adjust the pH. The formulated hand wash gel was filled in suitable containers and stored at cool and dry place.

Table 1: Formulation of herbal hand wash gel

Composition (%W/V)	Formulation code					
	H_1	H_2	H_3	H_4	H_5	H_6
Cinnamon oil	0.1	0.1	0.1	0.1	0.1	0.1
HPMC	1	2	3	4	4	4
SLS	1	1	1	1	2	2
Glycerin	1	1	1	1	1	2
TEA	*q.s	q.s	q.s	q.s	q.s	q.s
Perfume	q.s	q.s	q.s	q.s	q.s	q.s
Colorant	q.s	q.s	q.s	q.s	q.s	q.s
Methyl paraben	q.s	q.s	q.s	q.s	q.s	q.s
Purified water q.s to	100 ml	100 ml	100 ml	100 ml	100 ml	100 ml

*q.s= quantity sufficient

2.6

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2.6 Characterization of Herbal Hand Washes Gel

A. pH

The pH was determined by using digital pH meter and the pH of herbal hand wash was found 6.5±0.1.

B. Viscosity

The viscosity of hand wash was determined by using digital Brookfield viscometer. Measured quantity of herbal hand wash was taken into a beaker and the tip of viscometer was immersed into the hand wash gel and the viscosity was measured in triplicate. The viscosity was found 50c Pascals.

C. Antimicrobial Studies of Herbal Hand Wash Gel

The screening of anti-microbial efficacy of the formulated poly herbal hand wash gel was aseptically performed on Escherichia coli, Staphylococcus aureus, and Salmonella by using Dip well Agar Diffusion Technique described by Bauer et al., 19669 and demonstrated by Cakir et al.,2004[10] was employed for antibacterial bioassay. A well was prepared in the plates (containing 15ml of Muller– Hinton agar medium) with the help of a cork-borer (0.85cm).
100µl of the test compound (herbal hand wash gel) was introduced into the well. The standard antibiotic discs like erythromycin, penicillin, streptomycin and Ampicillin 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.

D. Antibacterial Efficiency of Herbal Hand Wash Gel on Volunteers

The antibacterial efficiency was performed by spread plate technique. Samples were collected from the six different volunteers showing no clinical signs of dermal abrasion, trauma and infection. Approximately 500 µl of herbal hand wash gel was applied to both hands. After washing the hands, the samples were collected from each volunteer in a separate glass beaker and the collected samples were allowed to grow on nutrient agar media for overnight at 37°C and per ml CFU were calculated.

E. Stability

The stability studies were carried out by storing at different temperature conditions like 40°C, 25°C & 37°C for 1 week. During the stability studies no change in colour and no phase separation were observed in the formulated hand wash. Also the formulations with stand its activity.

III. RESULTS AND DISCUSSION

According to the zone of inhibition formed resulting from the herbal hand wash gel against different bacterial isolates, showed that the hand wash prepared with cinnamon oil had great activity. Statistical analysis findings in fig: 6 showed that herbal hand wash gel is the broad spectrum antibacterial agent with different response for different bacterial kinds tested. From the investigation it was clear that Cinnamon oil was equally effective against both the groups of bacteria. It produced the widest zone of inhibition against S. aureus with diameter of 4.0 cm, E.coli 3.5 cm followed by Salmonella 3.0 cm. The inhibition by cinnamon oil could be due to the presence of active constituents such as cinnamaldehyde and cinnamic acid. These are terpenoids in nature. Their activity is a function of the lipophilic properties of the constituent terpenes, the potency of their functional groups and their aqueous .

IV. CONCLUSION

In conclusion, based on the above findings it is clear that cinnamon oil is active against the microorganisms. The results clearly revealed that the formulated herbal hand wash gel is effective with no side effects on human tissue. Hence a new way can be found to come back antibiotic resistant of pathogenic organism and provide safe and healthy living through germ free hand, all though the removal is not 100% but a major number can be reduced.

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