

## FORMULATION AND EVALUATION OF POLY HERBAL FACEWASH GEL FOR ANTI MICROBIAL ACTIVITY

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### ABSTRACT

Poly herbal means collecting of different ingredients (excipients) from different herbal formulations. Curcuma longa (Linn), family (Zingiberaceae) possessing antibacterial properties are the truth is that most prescribed medicine even today contains plant extract. Curcuma longa (Linn). (Zingiberaceae), a readily available antiseptic, possess antibacterial, antioxidant, blood purifying and anti-inflammatory properties and used in various skin creams. Objective of my study was Acne is the common skin problem that 80% of the teenagers face today. In this study, poly herbal anti-acne face wash gels were prepared using two polymers Pectin and menthol along with the extracts of Curcuma longa (Linn) by fusion method. The formulations were tested for the anti-acne activity (anti-microbial activity) by biological evaluation and evaluated for stability, pH and Viscosity. Results: Results showed that the gels were non-irritant, stable and possess anti-acne activity. The efficacy when tested with a standard was almost same to that of Curcumin gel. Discussion and conclusion: From this study, Gel-pectin was proved to be stable and considered as an effective herbal formulation for acne treatment.

**KEYWORDS:** Anti microbial activity, Herbal facewash gel, Evaluation parameters.

### INTRODUCTION

For thousands of years using herbs for medicines. Herbs, this definition has been expanded to any of the plants of which part or whole can be used in medicinal treatments. Herbal extracts as the name suggests, is the extract of herbs. Herbal extracts are an ancient methodology as its references have been discovered in holy Vedas and in unani scriptures. (WHO. 1993) Herbal extracts are primarily added to the cosmetic preparations due to several associated properties such as antioxidant properties. These antioxidant botanicals are generally classified into three categories depending upon the nature of their constituents as carotenoids, flavonoids and polyphenols. Flavonoids, impart the UV protection and metal chelating properties. The polyphenols is a large class and contains various molecules like rosmarinic acid (rosemary). The herbal extracts have also been used for the topical anti-inflammatory properties. These agents block the inflammatory changes that result during cutaneous ageing and thus may be helpful in reversing the signs of ageing. (Shaw, et al., 1998). The word cosmetics derive from the Greek. The beauty of skin and hair basically depends on individual's health, diet, habits, climatic conditions and maintenance. The other main objectives of cosmetic application are psychological, social and clinical. The main objective of

the cosmetic application is decorative to enhance the general appearance of face and other body parts to minimize skin defects to a considerable extent (Rashmi et al., 2008). Culinary preparations, nutritional supplementation, or used as a coloring or cosmetic agent. When herbs are taken, the body starts to get cleansed, it gets purifying itself. Unlike chemically synthesized, highly concentrated drugs that may produce many side effects, herbs can effectively realign the body's defenses.

In the present study was to Formulate and evaluate poly-herbal face wash gel. (Arun rasheed et al., 2011) Poly herbal means collecting of different ingredients (excipients) from different herbal formulations. My objective was acne is the common skin problem that 85% of the teenagers face today. poly herbal face wash gels were prepared using different poly herbal excipients.

### MATERIALS AND METHODS

#### Materials

Curcuma longa Pure Curcumin powder was collected from medicinal garden from laila impex. The other excipients are pectin, menthol, eugenol, glycerin,  $\alpha$ -Tocopherol, methanol and distilled were used for analytical grades were collected from Sri Srinivasa Ayurvedic pharmacy located in Tirupati.

## Methods

### Preparations of Facewash Gel of Curcumin powder extract (Arun Rasheed *et al.*, 2011)

18gm of pectin powder was weighed & it was dissolved in 10ml of water & it was stirred with lab stirrer for 5min with 50 rpm. The above prepared gel base was used to prepare face wash gel. 2mg of Curcumin was weighed; it was dissolved completely in 20ml of methanol. And this solution was slowly added drop wise to the gel base while stirring. Followed by Tocopherol (3.5ml), glycerin (3.5ml), menthol (0.5gm), Eugenol (0.04ml), also added as per order of preference. Finally the remaining quantity of distilled water was added to make the required gel consistency to get complete face wash gel.

### Characterization of Herbal Face Wash Gel Formulations

#### A. Physical Evaluations

##### Determination of pH and viscosity

The viscosity of face wash was determined by using digital Brookfield viscometer. 50ml of herbal face wash is taken into 100ml of beaker and the tip of viscometer was dipped into the beaker containing face wash formulation its viscosity was measured. The P<sup>H</sup> was determined by using digital P<sup>H</sup> meter. 50ml of herbal face wash is taken in beaker and dipped the bulb of the P<sup>H</sup> meter into the formulation and the P<sup>H</sup> was measured.

##### Determination of Stability

The stability studies were carried out with face wash formulations i.e., Curcumin containing gel at a room temperature 45°C for 4 week, then its stability was observed.

#### B. Biological evaluation

##### In-vitro Anti microbial evaluation of Curcumin face wash gel

The screening of Anti-microbial efficacy of the formulated Poly Herbal face Wash and extracts was performed on various microorganisms by using Dip well method as per standard procedure.

Three sterile Petri plates are taken for testing the anti-microbial activity against two different microorganisms' i.e *E.coli*, *Streptomycin aurious* and *pseudomonas aurigenious organisms*. First nutrient broth solution was prepared and inoculated the microorganism and kept in incubator at 37<sup>0</sup>c for 24 hours to grow the organism. The next day nutrient agar solution was prepared and allowed for solidification in Petri plates. After solidification the microorganisms were inoculated into the nutrient agar media and cavities were made in it. The cavity is filled with herbal face wash gel. It was taken care that sample should be placed at the level of cavity. The Petri plates are placed in incubator at 37<sup>0</sup>c to test the activity. Next day the Petri plates were observed for the formation of zone of inhibition. From the zone of inhibition the anti-microbial activity of formulation is estimated.

## RESULTS AND DISCUSSION

The study was aimed to formulate & evaluate Curcumin containing complete herbal based face wash gel. The gel base was prepared by normal preparation of gel base & all the allowed ingredients incorporated into the gel base. The evaluation was extended to know the preliminary properties of gel such as P<sup>H</sup>.

#### A. Physical evaluation of face was gels

##### Characterization of Curcumin face wash gel

The viscosity was determined using Brook feild viscometer. The viscosity shows by our formulation is 40 – 120 m.pascals. The viscosity is compiling with the normal gel formulation. The P<sup>H</sup> was found to be 6.6 though the skin P<sup>H</sup> is 6.8 our formulated gel shows almost near P<sup>H</sup>. Further the study aimed to evaluate the stability of the formulated gel for a period of 4 week with a stable temperature condition 45<sup>o</sup>c. After 4 week of storage it was observed that, No physical, separation & colour change in the gel. Thus our formulation concluded to have more stability.

#### B. Biological evaluation of face wash gel

##### In-vitro evaluation Anti-microbial activity of poly herbal face washes gel (Delaquis *et al.*,2002)

The comparative anti-bacterial assay was performed by well-diffusion method. The study was carried out with three major bacteria i.e., *E.coli*, *Streptomycin aurious*, *pseudomonas aurigenious*, which is causing different infectious diseases in the facial skin surface.

The study reveals that the zone of inhibition of *E.coli* produced by the pure Curcumin, placebo gel, gel with Curcumin and Marketed gel via. 0.8mm, no zone of inhibition, 0.5mm and 0.7mm respectively. Whereas against *Streptomycin aurious* the formulation shows the 0.9mm, no zone of inhibition, 0.6mm, and 0.7mm. Hence the prepared formulation showed increased activity than the other two bacteria which was used for the study. In the case of *pseudomonas aurigenious*, the zone of inhibition was same as that of the zone of inhibition produced in the *E.coli*, due to multiple excipients interference, the activity was decreased but my formulation has significant antibacterial activity against all the bacterial used in this study comparatively with the marketed formulation of face wash gel.

**Table No: 1 Zone of inhibition with selected micro-organisms.**

S. No.	Micro-Organisms	Zone of inhibition in mm			
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1	<i>E.coli</i>	0.8	0.5	0.7	
2	<i>Streptomycin aurious</i>	0.9	0.6	0.7	
3	<i>pseudomonas aurigenious</i>	0.8	0.5	0.7	

T<sub>1</sub> = Pure Curcumin.

T<sub>2</sub> = Placebo gel preparation.

T<sub>3</sub> = Gel with Curcumin preparation.

T<sub>4</sub> = Marketed gel. (Cucumber face washes gel)

### Figures showing zone of inhibition

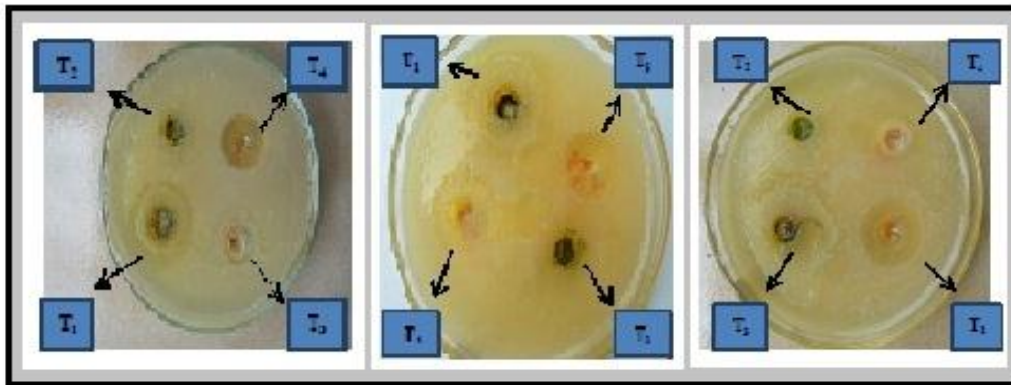


Fig No.1. Plate showing  
zone of inhibition.  
(*E.coli*)

Fig No. 2. Plate showing  
zone of inhibition  
(*Streptomyces aureus*)

Fig No 3. Plate showing  
zone of inhibition  
(*Pseudomonas aeruginosa*)

### DISCUSSION

The evaluation was extended to know the preliminary properties of gel such as  $P^H$ , the  $P^H$  was found to be 6.6 though the skin  $P^H$  is 6.8 our formulated gel shows almost near  $P^H$ . The viscosity shows by our formulation is 40 – 120 m.pascals. The viscosity is compiling with the normal gel formulation. Further the study aimed to evaluate the stability of the formulated gel for a period of 4 week with a stable temperature condition 45°C. After 4 week of storage it was observed that, No physical, separation & color change in the gel. Thus our formulation concluded to have more stability. These compounds can be extracted and incorporated in bases in order to prepare anti-bacterial face wash gel with less or no side effects. Hence a new way can be found to combat antibiotic resistant of pathogenic organism and provide safe and healthy living.

### CONCLUSION

The herbal face wash gel prepared was checked for its efficacy using dip well method. The results clearly proved that the herbal face wash thus prepared is more effective than the commercially available synthetic face washes. So here by me conclude that my formulated poly herbal face wash gel shows a significant activity than the commercially available face wash gels.

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