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Formulation And Evalution Of Polyherbal Gel For Skin Allergy And Its Infections

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Abstract

The aim of this study was to formulate the polyherbal gel ant its screening for skin allergy and its related infections by *in vitro* methods.The selected plants were identified by organoleptic characters and powder microscopy. The results of phytochemical screening showed the presence of alkaloids, phenols and terpenoids All above optimised formulation were screened for anti-inflammatory assay by Serum albumin the present study also was focused to study anti-fungal activity by Agar –well diffusion method. Anti-inflammatory activity results showed that the formula F2 and F4 showed remarkable percentage inhibition as compared to F1, F3 and F5. The results of anti-fungal activity also showed that F2 and F4 were found to be good zone of inhibition, whereas F5 more effective as compared to standard anti-fungal drug. From the observations of the present study, the poly herbal gel (F2 and F5) were found to be good for allergy with respect to inflammations and infections. This is due to high concentration of *Acalypha indic* and *Andrographis panniculata*.Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infectionsThe formulated polyherbal gel for skin allergy and its infections shows promising potential as a natural remedy. Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infections.The formulated polyherbal gel demonstrated by showing promising results in reducing skin allergy and related infections .Its anti-microbial and anti-inflammatory properties proved its potential for effective treatment for skin allergy and its related infections .

Key words: *Ocimum bascilum*, *Andrographis panniculata*, *Cynadon dactylon* and *Acalypha indica*.polyherbal gel , allergy .

1.Introduction

[9]Herbal formulations have reached widespread acceptability as therapeutic agents like anti-microbial and anti-inflammatory, The environment is being continuously deteriorated by air pollution and global warming, increased pressure of work or family on life, and changes in lifestyle; these factors have contributed to an increase in the proportion of both females and males with sensitive skin. To this end, the cosmetics market has focused on developing hypoallergenic or skin-soothing and make-up products. [8]However, few applications exist in the anti-allergy field; the research is insufficient, and therefore anti-allergy products are not widely used. While many people have sensitive skin, at present, there is a lack of research on natural anti-allergy ingredients. The use of plant extracts as active ingredients in cosmetics has many advantages compared to traditional cosmetics, such as safety. Natural components are easily absorbed by the skin, and the effect of the product is therefore pronounced and functional. In addition, plant extracts are widely available, and their mechanism of action is highly targeted. Therefore, using natural plant extracts in cosmetics is an imminent trend in market development. With this back ground and based on literature Survey folklores claims, the commonly

available in indigenous plants were selected for the gel formulation

1.1Materials and Methods

Extraction

The powder of selected plant materials was purchased from Yucca enterprises, Chennai and identified by powder microscopy method. The identified powders were extracted first with petroleum ether followed by 70 % alcohol by cold maceration method. After three days, it was filtered, Petroleum extract was decanted and evaporated to dryness. The dried defatted residue was extracted with 70 percent alcohol and alcoholic extract was collected and evaporated to dryness [1]. The dried extract was used for chemical test and for formulation of gel.

Phytochemical Test

The powder plant materials and its petroleum ether, alcoholic extracts were screened for identification of its phytocompounds. the results of the test are exhibited in table 2.

1.2Formulation of Gel [2]

The gel was formulated by using alcoholic extract of selected four plants *Ocimum bascilum*, *Andrographis panniculata* , *Cynadon dactylon* and *Acalypha indica*. The gel was prepared by using almond gum resin, Propylene glycol-400, EDTA, Carbopol – 940 as excipients and water in sufficient amount to prepare 25gms of herbal gel.

Table 1 Composition of poly herbal gel

SNO	CONTENT	QUANTITY (25GMS)
1	Carbopol 940	13.025
2	Propylene glycol 400	1.36ml
3	Almond gum resin	13.025
4.	EDTA	0.936
5.	Dried alcoholic extract of plant	1 gram

Optimisation of poly herbal gel

Table 2 Ratio of the plant extracts in the developed formulas [F1 – f6]

S.No	Formula Code	Plant extracts				Final Ratio
		AI	CD	OB	AP	
1	F1	1	1	1	1	1:1:1:1: - AL:CD:OB:AP
2	F2	2	1	1	1	2:1:1:1: - AL:CD:OB:AP
3	F3	1	2	1	1	1:2:1:1: - AL:CD:OB:AP
4	F4	1	1	2	1	1:1:2:1: - AL:CD:OB:AP
5	F5	1	1	1	2	1:1:1:2: - AL:CD:OB:AP
6	F6 [Control]	-	-	-	-	---

AI - *Acalypha indica*
OD - *Cynadon dactylon*
OB - *Ocimum basilicum*
AP - *Andrographis panniculata*

1.3ANTI INFLAMMATORY ACTIVITY BY IN VITRO METHOD [BOVIN SERUM METHOD] [3,4]

The method of Williams et al, (2008) was employed for the anti-inflammatory assay. A solution of 0.2%w/v of BSA was prepared in Tris buffer saline and pH was adjusted to 6.8 using glacial acetic acid.[2] Extracts of Plant material were added in different concentrations of 10, 20, 30, 40, and 50 ug/ml. 5ml of 0.2 % W/V BSA was added to all the above mixture. Diclofenac was used as a Control. The test tubes were heated at 72°C for 5 minutes and then cooled for 10 minutes. [3]The absorbance of these solutions was determined by using UV/Vis Double beam spectrophotometer at a wave length of 660 nm. The % inhibition of precipitation (denaturation of the protein) was determined on a % basis relative to the control using the following formula:

$$\% \text{ Inhibition} = \frac{\text{(Absorbance of the control (AC)} - \text{Absorbance of the sample (AS)}}{\text{Absorbance of the control (AC)}} \times 100$$

1.4ANTIFUNGAL STUDY BY AGAR WELL DIFFUSION METHOD [7]

The fungal cultures of *Aspergillus flavus* (MLAC1101) and *Penicillium frequentness* (MLAC 2101) are the laboratory cultures belonging to Research and Development of Marina Labs. The fungi were subcultured for 72 hours for sporulation and the developing spores were used for the evaluation of antifungal activity.

The agar well diffusion method was adopted to test the antifungal activity of the given sample (F1, F2, F3, F4 and F5). The samples were tested using Sabouraud's Dextrose Agar plates.[7] The surface of the agar plate was streaked with the respective cultures (fungal strains). Then 5 mm diameter wells were cut into the agar medium using a sterile cork-borer. The plates are allowed to dry to remove excess moisture for 20 min. The compounds of 100 µl, 200 µl and 300 µl were dispensed into each well respectively while 10 mg of Fluconazole was used as the positive control. The plates were incubated at 37°C. The tests were conducted in Triplicate. After 48 hours of incubation, each plate was examined for zones of inhibition. The zone of inhibition was recorded as the diameter of inhibition zone in mm.

2.Results

	Dried powder					Petroleum ether					Alcohol extract				
Phytoconsitutents	Kuppaimeni	Arugampul	Thirunerertru	Pechaiillai	Nilavembu	Kuppaimeni	Arugampul	Thiruneertru	Pechaiillai	Nilavembu	Kuppaimeni	Arugampul	Thiruneertru	Pechaiillai	Nilavembu
Alkaloids											-	-	+		-
Steroids	-	-	-		-	-	+	-		-					
Phenols						+	+	+		+	+	+	+		+
Flavonoids										-	-	-	-		-
Fats/waxes	+	+	+		+	+	+	-		+					
Proteins											-	-	-		-
Terpenoids	-	-	-		-	-	-	-		-					

Table 3 Results of phytochemical test of herbal powder and its extracts

	Formulation Percentage of inhibition						
Concentration	F1	F2	F3	F4	F5	F6	Diclofenac
100	10	0	19	100	10	-	100
200	33.3	33.3	20	100	10	-	-
300	53.3	43.33	36.6	100	20	-	-
400	80	66.6	50	100	50	-	-
500	100	86.6	60	100	100	-	-

Table 4 Anti-inflammatory activity of polyherbal formulations F1-F6 and standard

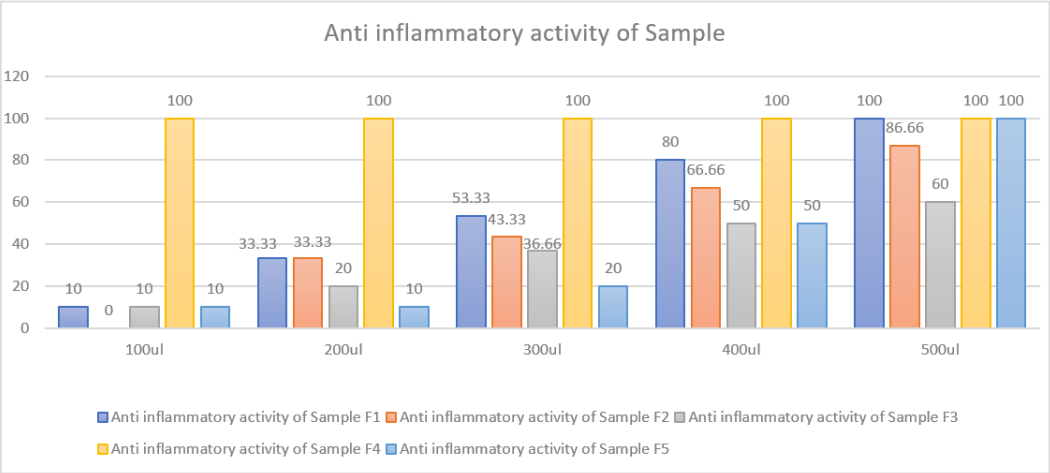

Figure 1

Figure 2

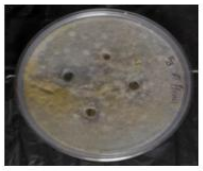

Figure 3

Figure 4

F2- Standard= *Penicillum frequentans* ***Aspergillus flavus*, Standard F3**

Table 5 Zone of Inhibition (*Penicillum frequentas*)

	Zone of Inhibition					
Concentration						
	Penicillum frequentans					
	F1	F2	F3	F4	F5	Standard
100	-	11	8	7	7	
200	7.2	11	10.2	10	11	11
300	10	14	12.5	13	15	

Table 6 Zone of Inhibition (*Aspergillus flavus*) flavus)

	Zone of Inhibition					
Concentration						
	Aspergillus flavus					
	F1	F2	F3	F4	F5	Standard[Flucanozole]
100	7	9.2	5.5	-	9	
200	9	12.1	8.2	9	14	14
300	11	13.3	10	13	18	

3.Discussion

Herbal formulations have reached widespread acceptability as therapeutic agents like anti-microbial and anti-inflammatory, The environment is being continuously deteriorated by air pollution and global warming, increased pressure of work or family on life, and changes in lifestyle; these factors have contributed to an increase in the proportion of both females and males with sensitive skin. To this end, the cosmetics market has focused on developing hypoallergenic or skin-soothing and make-up products. However, few applications exist in the anti-allergy field; the research is insufficient, and therefore anti-allergy products are not widely used. While many people have sensitive skin, at present, there is a lack of research on natural anti-allergy ingredients. The use of plant extracts as active ingredients in cosmetics has many advantages compared to traditional cosmetics, such as safety. Natural components are easily absorbed by the skin, and the effect of the product is therefore pronounced and functional. In addition, plant extracts are widely available, and their mechanism of action is highly targeted. Therefore, using natural plant extracts in cosmetics is an imminent trend in market development.

With this back ground and based on literature Survey folklores claims, the commonly available in indigenous plants were selected for the gel formulation. The selected plants were identified by organoleptic characters and powder microscopy. The results of phytochemical screening showed the presence of alkaloids, phenols and terpenoids

The F1 to F5 formula were optimized by trial-and-error method.

S.no	Formulation code	Amount in gram	Ratio of plant extracts
1.	F1	0.25	1:1:1:1
2.	F2	0.25	2:1:1:1
3.	F3	0.25	1:2:1:1
4.	F4	0.25	1:1:2:1
5.	F5	0.25	1:1:1:2

All above optimised formulation were screened for anti-inflammatory assay by Serum albumin method. Anti-inflammatory activity results showed that the formula F2 and F4 showed remarkable percentage inhibition as compared to F1, F3 and F5. All formulations were found to be good anti-inflammatory response against tested concentrations as compared to negative control (F6 without sample) . In order to confirm about anti-allergy property, the present study also was focused to study anti-fungal activity by Agar –well diffusion method. The results of anti-fungal activity also showed that F2 and F4 were found to be good zone of inhibition, whereas F5 more effective as compared to standard anti-fungal drug. From the observations of the present study, the poly herbal gel (F2 and F5) were found to be good for allergy related inflammations and infections.. So, the formulated herbal based gel has produced a promising role in allergy related infections. F5 formulates produced good and remarkable zone of inhibit of the tested organism. *(Aspergillus flavus)* with the value of 14mm and 18mm at 200 and 400 microgram concentrate were as standard inhibited only 14mm same effort was observed F5 and F4 for *Penicillium frequentans* at 300mg constant it inhibited the zone at the rate of 15mm. as compared to standard which shared to 11mm. So, the results concluded that the formula F2 and F5 showed significant antifugal and anti-inflammatory activity . this is due to high concentration of *Acalypha indic* and *Andrographis panniculata*. Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infections .The formulated polyherbal gel demonstrated by showing promising results in reducing skin allergy and related infections .Its anti-microbial and anti-inflammatory properties proved its potential for effective treatment for skin allergy and its related i

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4.Conclusion

The formulated polyherbal gel for skin allergy and its infections shows promising potential as a natural remedy. Through the combination of various herbal plant extracts the gel demonstrates effectiveness in alleviating allergic reactions and combating fungal infections .The formulated polyherbal gel demonstrated by showing promising results in reducing skin allergy and related infections .Its anti-microbial and anti-inflammatory properties proved its potential for effective treatment for skin allergy and its related infections

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