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RESEARCH PAPER

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1. INTRODUCTION

Herbal product is a chemical substance or compound produced from a living organisms, found in nature. Many cosmetic, food and dietary supplements produced from natural sources without adding artificial ingredients. The rich content of antifungal substances in plants are used biopesticide since up to the beginning of Human civilization. Antifungal effects of plant and plant product emerge clearly every day. Antifungal substance which are obtained from plants have no side effects against environment thus, giving a significant advantage.

Research found that compounds in the structure of plants and essential oil were showed Antifungal, antibacterial, insecticidal, nematicidal, herbicidal and antiviral activities.[1] The Transdermal drug delivery systems (TDDS) are self contained discrete dosage forms which can applied to intact skin that delivery the drug to the skin at a control rate to the systemic circulation. The success of Transdermal drug delivery depends on the ability of drug to permeate the skin at sufficient quantities to achieve its desired therapeutic effect. Gels have better potential as vehicle to administer drug topical in comparison to ointment because they are non sticky and requires low energy during the formulation and it is stable and have aesthetic value. The term gel is semi-solid, three dimensional, polymeric matrices containing small amount of solid dispersed in relatively large amount of yet possessing more solid in character.

FUNGAL INFECTION

The variety of fungi can affect a person's skin. When it happens the person has a fungal skin infection. Fungi disease also called as mycosis (cutaneous or superficial mycosi). The fungi live only in the dead, stratum corneum (topmost layer) and it dont penetrate deeper. Some fungal infections produce only a small amount of irritation, scaling and redness or cause no symptoms. and some fungal infections causes itching, swelling, blisters, and severe scaling.

1.2. GEL[19]

Gels are semi rigid systems in which the movement of the dispersing medium is restricted by an interlacing three-dimensional network of particles or solvated macromolecules of the dispersed phase. The USP defines gels (sometimes called jellies) as semisolid systems containing either suspensions made up of small inorganic particles, or large organic molecules interpenetrated by a liquid. The word gel is derived from gelatin, and both gel and jelly can be drawn back to the Latin gel for frost and gel are, meaning freeze or congeal. This origin indicates the essential idea of a liquid setting to a solid-like material that does not flow, but is elastic and retains some liquid characteristics. Use of the term gel'as a classification originated during the late 1800s as chemists attempted to classify semisolid substances according to their phenomenological characteristics rather than their molecular compositions. At that time, analytical methods needed to determine chemical structures were lacking. where the gel mass contains a network of small separate particles, the gel is classified as a two-phase system. In a two-phase system, if the particle size of the dispersed phase is relatively large, the gel mass is sometimes called as a magma. Single-phase gels consist of organic macromolecules uniformly circulated throughout a liquid in such a way that no apparent boundaries occur between the dispersed macromolecules and the liquid.

1.3. THE SKIN[18]

Skin is the largest organ in the body. It covers the body's entire external surface, serving as a first-order barrier against pathogens, UV light, and chemical, and provides a mechanical barrier to injury. It also regulates temperature and amount of water released into the environment.

Skin Thickness

• Hairless skin of the palms of the hands and soles of the feet is thick skin, referring to thickness of epidermis.

• The thickest skin based on the thickness of the dermis is on the upper portion of the back. But it is considered "thin skin" histologically because of epidermal thickness.

Layers of Epidermis

- **Stratum basale aka stratum germinativum –** Deepest layer, separated From dermis by basement membrane (basal lamina) and attached by hemidemosome. Cells are cuboidal to columnar and are mitotically active stem cells.

- **Stratum spinosum aka prickle cell layer –**Irregular, polyhedral cells with processes ("spines") that extend outward and contact neighboring cell by desmosomes.
- **Stratum granulosum -** Diamond shaped cells which contain kerytohyline granules; aggregates keratin filaments present in cornified.
- **Stratum lucidum-** If present, thin clear layer consisting of eleidin (transformation product of keratohyalin); usually seen in thick skin only.
- **Stratum corneum-** Outermost layer, made up of keratin and horny scales which were once living cells; dead cells known as squamous (anucleate); layer which varies most in thickness, especially thick in callused skin.

Dermis

It consists of two layers of connective tissue which merge together, no clear demarcation. Papillary layer - Outer layer, thinner, composed of loose connective tissue and contacts epidermis. Reticular layer - Deeper layer, thicker, less cellular, and consists of dense connective tissue/ bundles of collagen fibers. The dermis houses the skin appendages many sensory neurons, and blood vessels.

Hypodermis

Also called subcutaneous fascia, Deepest layer of skin. Contains adipose lobules along with some skin appendages (hair follicles), sensory neurons.

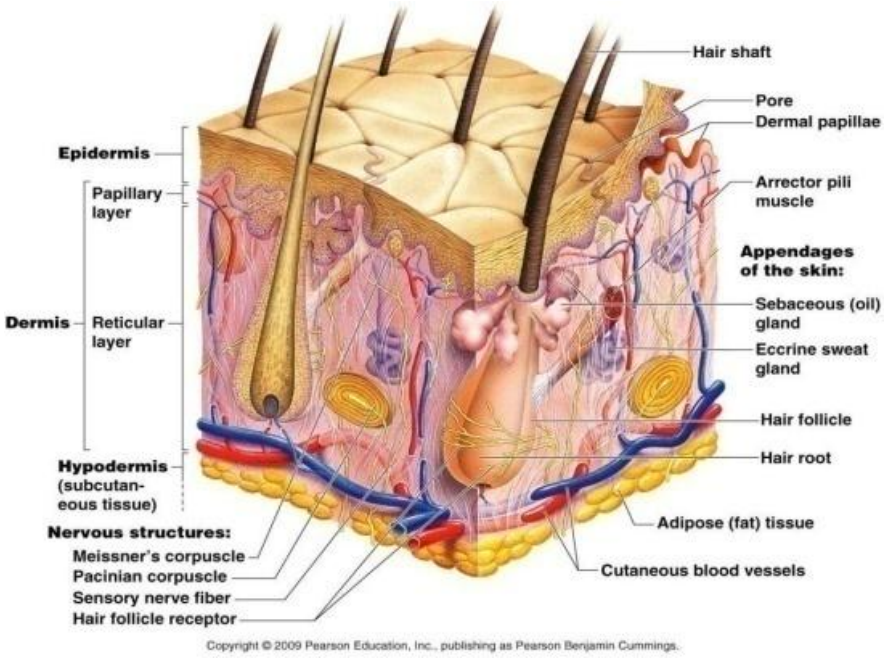


Fig.no.1:- Structure of Skin.

Transdermal Drug delivery system[22]

Transdermal drug delivery is hardly an old technology, since 1800's and the technology is no longer just adhesive patches. Due to recent advances in technology and the ability to apply the drug to the site of action without rupturing the skin membrane, transdermal route is becoming a widely accepted route of drug administration. Over the last two decades more than Transdermal patch products have been approved in US.

Transdermal drug delivery system can deliver the drugs through the skin portal to systemic circulation at a predetermined rate and maintain clinically the effective concentrations over a prolonged period of time.

MATERIAL AND METHODS

EXTRACTION OF PLANTS COLEUS AROMATICUS

Isolation of Essential Oil

The fresh plant material was subjected to hydrodistillation in a Clevenger type apparatus for 5 h. The oil was collected, dried over anhydrous sodium sulfate, measured and stored at -4 o C for further analysis.[11]

LEMONGRASS

Plant Materials

The leaves of Lemongrass (Cymbopogoncitratus) were first chopped into small pieces and kept in a dark and cold refrigerator until it used for the experiments. Before run the experiment the plant material were soaked in water based on in water to raw material ratio.

Distillation of lemongrass

Weigh 25 g of lemongrass and cut it into small pieces. The pieces were taken in 500 ml of round bottomed flask. Add 300 ml of distilled water to the flask containing the grass and set the apparatus for distillation. Boil the mixture vigorously and collect the distillate until no more oily drops can be seen passing over. More water should be added if necessary to avoid charring of flasks contents. Extract the distillate with hexane, dry them over sodium sulfate and remove the solvent on rotary evaporator with external heating at 45°C. Finally 2-3 ml of yellow to ochre coloured oily liquid with fresh lemon – like tone with a hint of rose was obtained.[12]

ALOE VERA

Extraction method

Mature, healthy and fresh leaves of A. vera were washed in the running tap water for 5 min and rinsed with sterile distilled water, then dissected longitudinally and the colourlessparenchymatous tissue (aloe gel) was scraped out using a sterile knife without the fibres. The gel was ground with DMSO using the mortar and pestle. The extracts were filtered using Whatman No. 1 filter paper and the filtrate was centrifuged at 5000 rpm for 5 min. The supernatant was collected and stored in refrigerator at 4°C.[13]

NEEM EXTRACT

Extraction procedure

The powdered sample (140 g) was extracted with a methanol solvent (260 ml) by using a maceration method for 3 days. After extraction, the sample was filtered by using a Bruckner funnel. The methanol solvent was evaporated by using a rotary evaporator under reduced pressure at 20 C for 1 h. The crude extract became a semi solid mass (11.15 g; 7.96%). The methanol semi solid mass (0.53 g) was transferred into a plastic tube for antioxidant activity, total phenols and biochemical screening tests. The remaining methanol semi solid mass (10.62 g) was dissolved in distilled water (120 ml) and was shaken until the crude extract dissolved. The water solution was transferred into a separatory funnel and fractionation by 30 ml and 20 ml of hexane, chloroform, ethyl acetate and butanol.[13] After extraction, all fractions were kept inside the fume hood for evaporation of the mother solvents to give hexane (0.22 g; 2.07%), chloroform (1.28 g; 12.05%), ethyl acetate (0.24 g; 2.25%) and butanol crude extract (2.34 g; 21.84%). Finally, the remaining water fraction was evaporated to give a water crude extract.

EVALUATION STUDIES PHYTOCHEMICAL EVALUATION OF ALOE VERA GEL

The gel extract was subjected to chemical tests for the identification of the various Phytoconstituents as per the standard procedure.[14]

Detection of Carbohydrates And Glycosides

Small quantity of gel extract was subjected to the following tests to the presence of carbohydrates.

Molisch test

The gel was treated with alcoholic solution of αNaphthol and a few dropes of conc.H2SO4 were added through the sides of the test tube. The formation of violet ring at the junction of the liquids indicates the presence of carbohydrates.

Benedict, s test

Gel was treated with 5ml of Benedict, s reagent and heated on a water bath for a few min. The formation of red-orange ppt indicates the presence of reducing sugars.

Legal Test

The test is employed for digitoxose containing glycosides. The extract of drug is dissolved in pyridine, sodium nitroprusside solution is added to it and made alkaline, pink or red color is produced.

TEST FOR ALKALOIDS

Dragendorff"s Reagent

It was prepared by mixing solution A (17 g of bismuth sub nitrate + 200 g of tartaric acid + 800 ml distilled water) and solution B (160 g potassium iodide + 400 ml distilled water).

Above Dragendorff"s reagent was sprayed on Whatman no. 1 filter paper then the paper was dried. The test filtrate after basification with dilute ammonia was extracted with chloroform and this extract was applied on the filter paper, impregnated with Dragendorff"s reagent with the help of capillary tube. Development of an orange red color on the paper indicates the presence of alkaloids.

Mayer's Reagent

1.36 g of mercuric chloride was dissolved in 60 ml water and 5 g of potassium iodide dissolved in 10ml of distilled water, solution were mixed and diluted to make up volume 100 ml. To a little of each extract taken in dilute hydrochloric acid in a watch glass, few drops of the reagent was added, formation of cream colored precipitate shows the presence of alkaloids.

Wagner's Reagent

1.27 g of iodine and 2 g of potassium iodide were dissolved in 5 ml of water and the solution was diluted to 100 ml with water. When few drops of this reagent were added to the test filtrate, a brown color precipitate was formed indicating the presence of alkaloids.

Hager's Reagent

A saturated aqueous solution of picric acid was employed for this test. When the test filtrate was treated with this reagent, an orange yellow precipitate was formed indicating the presence of alkaloids.

Test for saponins

Foam Test

A few mg of the test residue was taken in a test tube and shaken vigorously with small amount of sodium bicarbonate and water. If stable, characteristic honeycomb like froth is obtained, saponins are present.

Test for tannins

The test residue of each extract was taken separately in water, warmed and filtered. Tests were carried out with the filtrate using following reagent-

Ferric Chloride Test

A 5% solution of ferric chloride in 90 % alcohol was prepared. Few drops of this solution was added to a little of the above filtrate. If dark green or deep blue color is obtained, tannins are present.

Lead Acetate Test

A 10 % w/v solution of basic lead acetate in distilled water was added to the test filtrate. If precipitate is obtained, tannins are present.

Test for flavonoids

Schinoda Test

A small quantity of test residue was dissolved in 5 ml of ethanol (95% v/v) and treated with few drops of concentrated hydrochloric acid and 0.5 g of magnesium metal. The pink, crimson or magenta color is developed within a minute or two, if flavonoids are present.

Phytochemical Evaluation OfNeem Extract

Test for Alkaloids For detection of alkaloids, 500 mg of extract was dissolved with 20 ml of HCl (1%) than filter and following test was performed:

2 ml of filtrate, 1 ml of Mayer‟s reagent were added by the side of the test tube. A white or creamy precipitate indicated the test as positive.

B)2ml filtrate; 2 ml of Wagner‟s reagent were added by the side of the test tube. A reddish-brown precipitate confirmed the test as positive.

C) 2 ml of filtrate, 1-2 ml of Hager‟s reagent were added. A prominent yellow precipitate indicated the test as positive.

Test for Carbohydrates

Crude extract (400 mg) was dissolved in 20 ml of distilled water and filtered. The filtrate was subjected to following test:

A) To 2 ml of filtrate, molish reagent was added slowly drop wise along the side of test tube and allowed to stand. A violet ring indicated the presence of carbohydrates.

B) 1 ml of filtrate was boiled on water bath with 1 ml of each Fehling solution A and B. A red precipitate indicated the presence of sugar.

C) To 1 ml of filtrate, 1 ml of Benedict‟s reagent was added. The mixture was heated in boiling water bath for 2 min. A characteristic colored precipitate indicated the presence of sugar.

TEST FOR GLYCOSIDES

For detection of glycoside,

A)500 mg of extract was dissolved with 20 ml of concentrated HCl than filter and following test was performed: o To 2 ml of filtrate, 3 ml of chloroform was added and shaken, chloroform layer was separated and 10% ammonium solution was added to it. Pink color indicated the presence of glycosides.

Test for Phenolic compound and Tannins

A)2 ml of filtrate, 1-2 drops of 5% FeCl3 solution was added. A dark green color indicated the presence of phenolic compound.

B)2ml of filtrate, 0.5 ml of lead acetate solution was added. A bulky white precipitate indicated the presence of Phenolic compounds.

Test for Flavanoids

A) Extract were treated with 3 ml of 2% NaOH solution. Formation of intense yellow color, which becomes colorless on addition of dilute acid (H2SO4), indicates the presence of flavanoids.

B) The extracts were treated with few drops of 10% lead acetate solution. The formation of yellow precipitate confirmed the presence of flavonoids.

Saponins

The extracts (aqueous and ethanolic) were diluted with 20 ml of distilled water separately and further shaken for 15 mins in a graduated cylinder. A layer of foam measuring about 1 cm was formed which indicated the presence of saponins.

Physical Evaluation of Lemon grass oil

Odour

The Volatile oils must possess their characteristic natural odour. An expert can judge the quality of the oil and can differentiate between adulterated, artificial and genuine oils. The odour can be detected and be acquainted by: Droping 1-2 drops of the Volatile Oil on a filter paper and then smelling.[15]

Specific Gravity

The specific gravity of volatile oil may be defined as the ratio of the weight of a given volume of the oil to the weight of the same volume of water, at a stated temperature. It is determined by the use of specific gravity bottle, Westphal balance or pycnometer.

Procedure

Add 3-4 drops of the above mentioned oils to a test tube containing 10ml. of water, shake gently set aside for few minutes and notice which one floats or sinks in water.

Solubility

The volatile oils are generally soluble in absolute alcohol, ether, ethyl acetate, chloroform, carbon disulfide, acetone, petroleum ether (Except cinnamic aldehyde and oils containing it) and benzene.[16]

Exp. Introduce 1ml. of the oil in 10 ml graduated cylinder and add alcohol of the specified strength gradually until complete solution occurs.

Determination of Saponification Value (SV)

To determine the Saponification Value (SV) of studied plant-oils, 0.5 gm of sample was dissolved in 12.5 ml of 0.5N Alcoholic KOH Solution. The mixture was incubated in boiling water bath for 30 minutes, which was then be cooled at room temperature, and titrated with 0.5N HCL with 1% Phenolphthalein indicator. Besides, a blank was also run to have precise comparison among duplicates, and the mean results were considered. The same protocol (Blank and Mean) was followed for all the other biochemical tests. Saponification Value

(SV) (mg KOH) = A x 28.06 / W Where, A= Amount of HCL (ml) (Blank-Titer) W = Weight of Sample (gm)

Determination of Iodine Value (IV)

Gm of sample was dissolved in 10 ml of chloroform, to which 12.5 ml of Hanus Iodide Solution was added, and kept in dark for 30 minutes. Later, 15 ml of KI solution was added. The mixture was titrated with 0.1N Na2S2O3 Solution using 1% Starch Solution (Indicator). Iodine Value (IV) = [(A x N x 0.1269 x 100) / W] gm I2 / 100 gm of Oil Where, A = Amount of Na2S2O3 (Blank-Titer), N = Normality of Na2S2O3, W = Weight of Sample (gm)

Determination of Acid Value (AV)

For determination of Acid Value (AV), 0.1 gm of sample was dissolved in 10 ml of Neutral Solvent. The mixture was titrated with 0.1N KOH Solution after an addition of few (2-3) drops of 1% Phenolphthalein Indicator.[17]

Acid Value (mg KOH / gm) = (A x 0.1 x 56.1) / W

Where, A = Titer Value (ml), 0.1 = Normality of KOH W = Weight of Sample (gm)

FORMULATION OF TRANSDERMAL GEL

Preparation of Herbal Gel

Carbopol 940 gel base was prepared by hydrating Carbopol940 in propylene glycol and distilled water q.s. For 24 h followed by stirring with double bladed mixer at 200 rpm for 10 min. Then add herbal extracts like DMSO extract of aloe Vera gel, lemongrass oil and Neem were subsequently mixed with carbopolgel base using spatula until homogenous stable herbal gels were formed. The gels were then transferred into clear glass vials.

Formula for Polyherbal Transdermal gel

S.No	Ingredients	Quantity Taken (%)
1	Carbapol	25%
2	Triethanolamine	0.5%
3	Aloe Vera Gel	2%
4	Lemon Grass Oil	2%
5	Neem Extract	2%
6	Methyl Parabean	0.18%
7	Water	q.s.

EVALUATION OF POLYHERBAL GEL

Visual examination All developed gel was inspected for their homogeneity (19), color; and presence of lumps by visual inspection after the gels have been set in the container.

Spreadability test

Spreadability was determined by the apparatus consist of a wooden block, which was provided by a pulley at one end. By this method Spreadability was measured on the basis of the basis of the slip and drag characteristics of gel. An excess of gel (about 2g) under study was placed on this ground slide. The gel was then sandwiched between this slide and provided with the hook. 1Kg weight was placed on the top of the two slide for 5 minutes to expel air and to provide a uniform film of the gel between the slide. Excess of the gel was scrapped off from the edges. The top plate was then subjected to pull of 80gm. With the help of stirring attached to the hook and the time(in second) required by the top slide to cover a distance of 7.5 cm be noted. A shorter interval indicates better Spreadability.

Spreadability was calculated using following formula: $S = M*L/T$(1)

Where, S= Spreadability, M= weight in the pan (tied to upper slide)

L= length moved by the glass slide

T= Time(in sec.) taken to separate the slide completely each other.

Viscosity

Viscosity of gel was measured using Brookfield viscometer with spindle No.4 at 10 rpm.

pH determination

The pH of the gel was determined using digital pH meter.[21] The readings were taken for average of 3 times.

Grittiness

All the formulation were evaluated microscopically for the presence of any appreciable particulate matter which was seen under light microscope. Hence obviously the gel preparation fulfills the requirements of freedom from particular matter and form grittiness as desired for any topical preparation.

Skin irritation test

The study employed rabbits to test for the skin irritation. They were kept carefully following an acclimation period of the 7 day to ensure their suitability for the study. Test animal were kept within a limited-access rodent facility with environmental condition set to a temperature of ($25^{o}C$), A humidity of 60%-90% RH and a 12-hours light/dark cycle. Animal were provided labium access to a commercial rabbit-diet and drinking water was supplied to each cage. The area on the back of each rabbit was shaved prior to the experiment. The back was

divided into five marked area for the topical application of the gel containing various concentration of extract. Test product was placed on each area for 24hours using adhesive tapes. Scoring of the erythema and edema was performed at 24 and 72hours with Draize technique.

Extrudability

The gel formulations were filled in standard capped collapsible aluminium tube and sealed by crimping to the end. The weight of the tubes were recorded. The tubes were placed between two glass slides and were champed. 500g was placed over the slides and then the cap was removed. The amount of the extruded gel was collected and weighted. The percent of the extruded gel was calculated

>90% extrudability- excellent

>80% extrudability- good

>70% extrudability- fair

In vitro antifungal evaluation of polyherbal extracts

All the test organisms were screened for the activity against candida albicans, Microsporus, Malassezia furfur using modified agar well diffusion method.

Preparation of Inoculum

The suspension of all the organism were prepared using potato dextrose broth.

Suspension of organism were made in sterile isotonic solution of sodium chloride (0.9%w/v) and the turbidity was adjusted.

Agar well Diffusion Method

The potato dextrose agar plate for the fungi were prepared and 0.1 ml of fresh 18 hours old broth culture was spread on the respective media. After Spreading the culture, well of 6mm in diameter was made at the centre of the plate by using sterile cork borer. The well open was with the help of sterile forceps. Then 100µl of aqueous phase and 100 µl of Dimethyl Sulphoxidewas added in the well using Micropipette. The extract was allowed to diffuse; hence the prepared plate were kept in deep refrigerator for 25 minutes. After this plate were incubated at 28^{o} C for 7 days. The Zone of inhibition was measured in mm and recorded. The diameter of the zone was recorded. All results were expressed as mean ± S.D.

Stability Studies

Formulation was subjected to the stability studies at 25°C at, Room temperature and at 45°C (at 75 ±5% relative Humidity). Sample of the formulation was evaluated for 45day. The test carried out for the sample under the stability studies were color, viscosity, pH and Spreadability.

Comparative Studies

In vitro evaluation studies also carried out for formulation (Trandermal Gel) and measured the zone of inhibition transdermal gel with the marketed gel formulation and pH compare with other evaluation parameter like pH, viscosity, Spreadability and Extrudability.

RESULTS AND DISCUSSIONS

Physical Evaluation of Lemon grass oil

Sr.No.	Physical Parameter	Result
1	Color	Yellowish – brown Liquid
2	Odour	Resembling to lemon oil
3	Taste	Similar to lemon oil
4	Acid Value	1.436
5	Free fatty acid value	12.64
6	Refractive Index	1.433
7	Optical Rotation	-3 to +1.32
8	Solubility	Slightly Soluble
	In Alcohol Chloroform	
	In Water	Insoluble
	In Mineral Oil	soluble
	In Propylene glycol	soluble

Phytochemical Evaluation of aloe vera gel

Sr. no.	Test	Observation	Inference
1	**Carbohydrate and Glycosides**		
	a)Molisch test	Violet Ring appear at interphase	Carbohydrate Present
	b)Benedict test	Reddish brown ppt	Carbohydrate Present
	c) Legal test	No Pink or red colour	Anthraquinone glycoside absent
2	**Alkaloids**		

	a)Dragendroff's test	No Orange red ppt	Alkaloids absent
	b)Mayer's test	No creamy white ppt	Alkaloids absent
	c)Wagner's test	No brown colour ppt	Alkaloids absent
	d) Hager test	No Orange yellow ppt	Alkaloids absent
3	**Saponins** a) Foam test	No froth obtained	Saponins absent
4	**Tanin**	Dark green or deep blue colour obtained	Tannin present
5	**Flavonoid** a)Schinda test	No pink crimson colouration	Flavonoid absent

Phytochemical Evaluation of Neem Extract

Sr.no.	Test	Observation	Inference
1	**Carbohydrate**		
	a)Molisch test	Violet Ring appear at interphase	Carbohydrate Present
	b)Benedict test	Reddish brown ppt	Carbohydrate Present
	c) Fehling test	A Brick red colour	Carbohydrate Present
2	**Alkaloids**		
	b)Mayer's test	creamy white ppt	Alkaloids Present
	c)Wagner's test	brown colour ppt	Alkaloids Present
	d) Hager test	Orange yellow ppt	Alkaloids Present
3	**Saponins** a) Foam test	No froth obtained	Saponins absent
4	**Phenol and Tanin**	White ppt	Phenol and Tanin present
5	**Flavonoid** a)Schinda test	Intense Yellow color	Flavonoid Present

Evaluation of Gel

Physical Evaluation of gel formulation

The Prepared gel formulationwere inspected visually for their colour, homogeneity and Consistency.

Sr.No.	Test	Result
1	Color	Greenish
2	Homogeneity	Homogeneous
3	Consistency	Cream like Semisolid
4	Grittiness	No

Determination of pH, Spreadability, Extrudability and Viscosity.

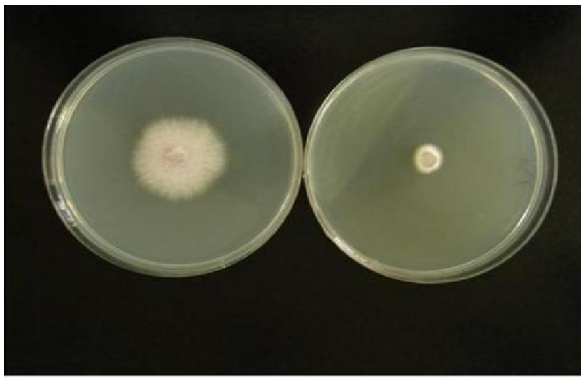
Sr.No.	Test	Result
1	Colour	Greenish
2	Homogeneity	Homogeneous
3	pH	6.8±0.15
4	Spreadability(gm.cm/s)	19.07±0.27
5	Extrudability	Very good
6	Viscosity	15,439 (cps)

IN VITRO EVLUATION OF ANTI-FUNGAL ACTIVITY STUDIES

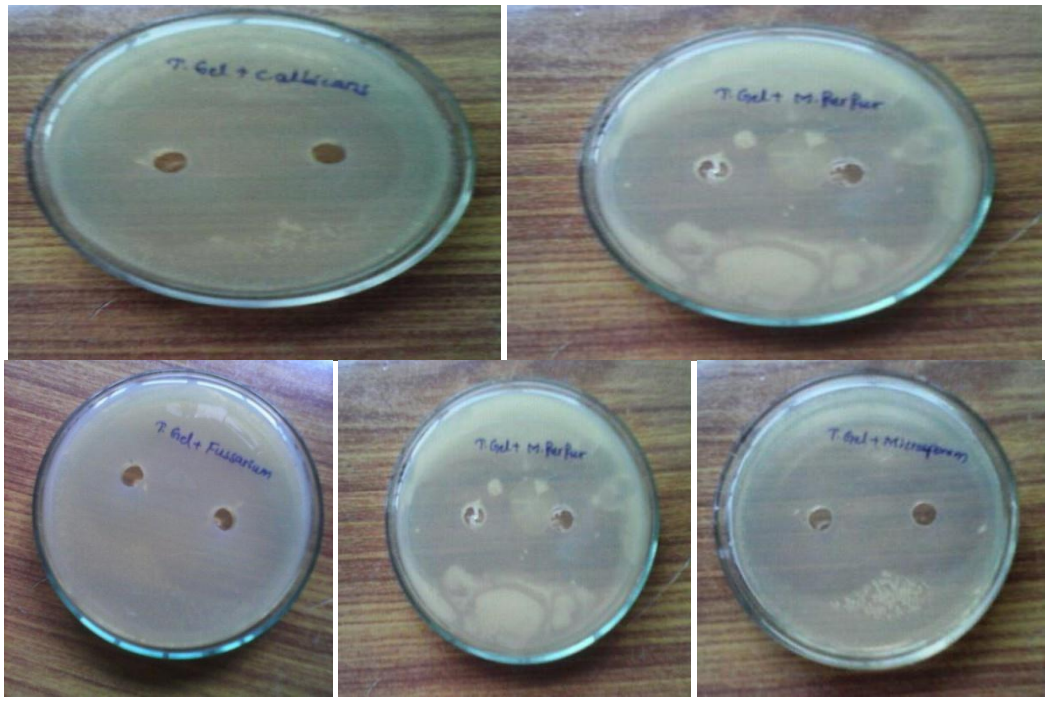
Images for in vitro evaluation of lemon grass oil

Images for in vitro evaluation of aloe vera gel

Images for in vitro evaluation of Neem Extract



IMAGES FOR IN VITRO EVALUATION OF TRANSDERMAL GEL



Results for In-vitro evaluation studies.

Organisms	Zone Of Inhibition(Mm)			
	Aloe Vera	Lemon Grass Oil	Neem Extract	Transdermal Gel
Candida Albicans	12.23mm	13.29mm	14.16mm	17.45mm
Microsporum	12.47mm	13.20mm	14.21mm	19.33mm
Malassezia Furfur	12.26mm	13.30mm	14.21mm	16.20mm

SUMMARY

In the present work, the pharmacognostical, phytochemical, Physical and In-vitro evaluation of oils of Lemon grass, Neem Extract and Aloe vera gel were carried out.

The results from phytochemical analysis indicated the presence of sterols, tannins, carbohydrates and reducing sugars.

The project was undertaken withan aim to design a Polyherbal Transsdermal Gel for Antifungal activities. Apreliminary literature survey Done. The plant were collected. Active constituents of different plant were extracted using extraction method.

For the formulation development gel formulation were selected because of advantage over semisolid formulation. Carbopol 940 as gelling agent used and herbal extract used in 0.5%, 1%, 1.5%.2%, 2.5%. Gel was evaluated as various parameters As per Satisfactory evaluation parameters, The stability study showed that there was no change in the formulation after 45

days. Finally, the prepared polyherbal transdermal gel was compare with marketed gel (DK Gel.).

CONCLUSION

From the result we can concluded that herbal plants (Neem extract, aloe vera, lemon grass oil) has great potential as antifungal properties.

A stable polyherbal gel containing plants extract can be prepared using carbapol as gelling agent.

From the results data it can be concluded that all framed objectives were achieved to a desired lelel.

There is wide scope to prepare different polyherbal formulations in different drug delivery systems with no side effect.

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