



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA):IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Research Article

Formulation And Evaluation Of Polyherbal Cream In Acne Treatment

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ARTICLE INFO

Received: 04 Aug 2024

Accepted: 08 Aug 2024

Published: 11 Aug 2024

Keywords:

Antiacne cream, Polyherbal extract, Berberis aristata, Achyranthesaspera, Catheranthusroseus

DOI:

10.5281/zenodo.13293845

ABSTRACT

Acne is commonly known as multifactorial chronic inflammatory disease of pilosebaceous units. Bacteria that contributes to causing acne are Propionibacterium acnes and Staphylococcus epidermidis. Acne occurs at any age mainly in adolescents. Propionibacterium acnes and Staphylococcus epidermidis cause pus in acne resulting in inflammation. In the market, there are variety of anti-acne topical preparation are available, such as topical creams, gels & patches. The herbal formulation has various advantages over synthetic formulation. So herbal drug Berberis aristata and Achyranthesaspera, Catheranthusroseus was found to be an efficacious and cost-effective anti-acne drug as compared to other drugs used in the treatment of acne. Antibacterial activity of poly herbal anti-acne cream containing the plant extracts of Berberis Aristata (leaves powder), Achyranthesaspera (leaves powder), Catheranthus roseus (leaves powder), and which were extracted out by maceration process using ethanol solvent. The antibacterial potential of ethanol extract of Berberis Aristata, Achyranthesaspera, Catheranthusroseus was used to prepare an anti-acne cream, to determine its activity using agar cup plate method.

INTRODUCTION

Acne is a common skin condition where the pores of skin clog. Pore blockages produce blackheads, whiteheads and other type of pimples. Pimples are pus-filled, sometimes painful bumps on your skin. The medical term for acne is acne vulgaris. Acne

is a common skin condition that affects people of all ages, but it is most common among teenagers. Acne is a skin condition that shows up as different types of bumps: blackheads, whiteheads, pimples, or cysts. Teens get acne because of the hormone changes that come with puberty. If your parents

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



had acne as teens, it's more likely that you will too. For most people, though, acne goes away almost completely by the time they are out of their teen. The type of acne that many teens get is called acne vulgaris ("vulgaris" means "of the common type"). It usually shows up on the face, neck, shoulders, upper back, and chest.

III. TYPES OF ACNE

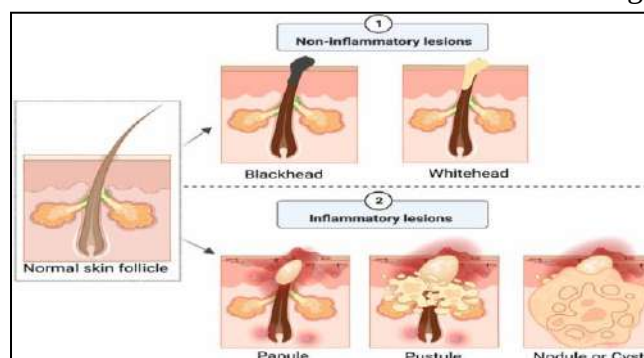


Fig 1: Types of acne

A. NON-INFLAMMATORY ACNE

Non inflammatory acne is caused by clogged pores but there is no pus or inflammation here are the two main types:

a. Whiteheads

These are little, flesh-colored bumps that frame beneath the surface of the skin when a pore is clogged with dead skin cells and sebum (oil). Whiteheads can too frame when a pore gets clogged by sebum and dead skin cells.

b. Blackheads:

Blackheads are similar to whiteheads, but the opening of the pore is larger and exposed to air. This oxidation is what causes the black appearance. Blackheads occur when a pore is clogged by a combination of sebum and dead skin cells.

B. INFLAMMATORY ACNE

Skin break out happens when microscopic organisms gets caught in clogged pore, causing irritation and redness. Pimples that are ruddy and swollen are allowed to as fiery skin break out, in spite of the fact that sebum and dead skin cells

Acne is usually associated with hormonal fluctuations experienced during your teenage years, but adults can experience acne, too. About 17 million Americans have acne, making it one of the most common skin conditions among both children and adults. Acne may be non inflammatory or inflammatory. Subtypes of acne within these two categories include.

contribute to fiery skin breakout, microscopic organisms can play a part in clogging up pores.

a. Papules:

These are little, ruddy bumps that are delicate to the touch. Papules happen when the dividers encompassing your pores break down from extreme irritation.

b. Pustules:

Pustules, also commonly called pimples, are similar to papules but have a white pus-filled center. Unlike papules, pustules are filled with pus. These bumps come out from the skin and are ordinarily ruddy in color.

c. Nodules

Nodules happen when clogged swollen pores persevere encourage disturbance and develop bigger. Not at all like pustules and papules, knobs are more profound underneath the skin.

d. Cysts

Cysts can create when pores are clogged by a combination of microbes, sebum, and dead skin cells. The clogs happen performed inside the skin

and are advanced underneath the surface than knobs.

MECHANISM

Acne vulgaris is caused by aggravation in the pilosebaceous gland. Skin break out is by and large caused by expanded excretion of sebum from pilosebaceous organs, endocrine variables such as androgenic hormones, keratin creating around follicles, bacterial development, and inflammation. These variables contribute to the arrangement of comedones (whiteheads and blackheads).

Benzoyl Peroxide:

This is the common ingredient in over-the-counter Acne cream. It works by releasing oxygen kills

Propionibacterium acne (P.acne) the bacteria that contribute to acne development.

Salicylic Acid:

This beta-hydroxy acid (BHA) helps loosen dead skin cells and unclog pores. It also has some anti-inflammatory properties.

Retinoids:

These are derivatives of vitamin A, such as tretinoin (Retin-A) and adapalene (Differin). Retinoids work by stimulating skin cell turnover and reducing sebum production. They can be irritating to the skin and make it more sensitive to sunlight

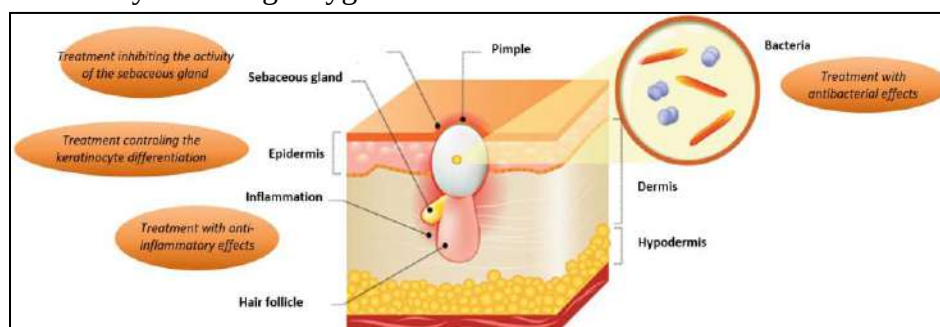


Fig no 2 : Mechanisms of anti-acne treatments

Taxonomy -

Plant	Berberis Aristat	Achyranthes aspera	Catharanthus Roses
Kingdome	Plantae	Plantae	Plantae
Class	Dicotyledonae	Monocotyledones	Magnoliopsida
Family	Berberidaceae	Asparagaceae	Apocynaceae
Common name	Daru haridra	Agada	Sadaphuli
Pharmacological properties	anti-diabetic, anti-microbial, anti-cancer, anti-lipidemic, anti-HIV, anti-pyretic, anti-inflammatory, antibacterial,	Anti-inflammatory, Anti-pyretic, Analgesic, Anti-oxidant, purgative, Anti-bacterial	Antiperiodic, diuretic, purgative, laxative, anti-allergic

MATERIALS AND METHODS

Collection of Material



Dried stem of Berberies Aristata powder purchased from Dhanvantari Aushadhalay shop No.04Building No.05Opp.Petrolpump, MaheshSociety, Bibvewadi,pune. Catharanthus roseus leaves are available from Nasrapur,Naigoan. Achyranthes aspera powder purchased from Ayurvedic Aushadhalay Nasrapur,Naigaon. All excipients Carbopol 934, parabens, tween 80, span 80, trim ethylene propylene glycol are procured from the laboratory of Navsahyadri Institute of Pharmacy S.No. 69-71,Naigaon Nasrapur Tal. Bhor, Dist 412213 All excipients are of analytical grade.

METHOD

Preparation of plant extract

The leaves of Catharanthus roseus were cleaned with fresh water and air dried for few days and then they were powdered into fine mixture. The obtained powders were stored in air tight containers at room temperature and preserved. Ethanolic extract of Berberis aristata dried stem powder 5gm macerated with 100ml ethanol in a closed flask for up to 24hr with shaking in-between frequently during six hours and stands for up to forty-two hrs. And then filter and take filtrate as ethanolic extract of Berberis aristata. The powdered material of achyranthes aspera and dried powder catharanthus roseus was extracted in ethanol was macerated till discoloration . after 3,4 days filter the extract with the whatman filter paper and store in tightly closed container.



Fig no 3 Maceration of ethanolic extract of Berberies aristata ,achyranthes aspera,catharanthus roseus.

FORMULATION OF HERBAL ANTI ACNE CREAM

Procedure:-

a. Preparation of oil phase

Prepare by adding span 80 as oil soluble emulsifying agent that is coconut oil.

b. Preparation of water phase

Add Berberis aristata, achyranthes aspera and catharanthus roseus (Add 6ml each extract) in water phase and add Bees wax , tween 80 as water soluble emulsifying agent. Then add preservatives methyl & propyl paraben with propylene for its solubility.Separately at to 80c and then oil phase adds in aq. Phase with constant stirring till cool at room temperature.

Formulation table-

Sr. no	Ingredients	Formulation % w/w	Properties
1	Bees wax	3gm	Antioxidant , anti-inflammatory, antimicrobial
2	Coconut oil	4ml	oil phase
3	Carbopol 934	1gm	thickening agent
4	Span 80	0.5ml	emulsifier
5	Tween 80	1.5ml	emulsifier



6	Propylene glycol	0.01gm	Humectants,emollient or preservative
7	Methyl paraben	0.03gm	preservative
8	Propyl paraben	0.01gm	preservative
9	Triethanolamine	q.s	PH adjuster
10	Water	q.s	vehicle



Fig no 4: Prepared cream

Antibacterial action testing

Agar cup plate method -

The agar was liquefied, cooled and poured into petri dish. 0.2ml of inoculum was spread on the set petri dish. 4 glasses were drilled with a sterile borer. Three diverse concentrations 0.5ml, 1ml, 2ml of test extract were poured into glasses of agar plate and to the remaining bore standard solution 200mg was included. The petri dish was hatched at 37°C for 24hrs. Antibacterial movement for the ZI was at that point watched. [18-20]

Determination of Minimum Inhibitory Concentrations (MIC)

The MIC is characterized as least concentration of an specialist to anticipate development of microorganisms. Different concentrations of the extricate were arranged. The tests were copied and cruel was gotten

EVALUATION TEST:-

1. Physical Parameter:-

Physical characteristics were examined and noted. Creams were evaluated for colour, appearance, pH, viscosity, spreadability and stability

2. pH:-

About 1 gm of the cream was weighed and dissolved in 10 ml of distilled water and its PH was measured. Normal pH of acne cream is range of 6.8 to 7.0.

3. Spreadability

The spreadability is evaluated for cream by measuring its spreading diameter between two horizontal plates for one minute.

$$S = M \times L / T$$

S- spreadability

M -weight of pan

L- length glass slide

T - time (in sec.) taken to separate the slides.

RESULT

1. Physical parameters :

The physical parameter of prepared emulgel was checked visually for acne cream. The results are shown in table no.1

Sr. No	Parameter	Observation
1	Appearance	cream
2	Colour	Greenish
3	Texture	Smooth
4	Consistency	Good
5	Test of irritancy	No irritation reaction

2. pH :

The pH of the formulation was found to be in the range of 6.10 to 7.0. This range lies within the normal pH range for skin and would not produce any irritancy to the skin.





Fig no 5 .Determination of pH

3. Spreadability

The spreadability of the emulgel formulation was determined after 24 hrs. after permeation. It is calculated by measuring the spreading diameter of 1 gm. of emulgel between 2 horizontal plates (20*20 cm) after one minute. The Voltaren emulgel used as reference standard the formulation of cream.

4. Antimicrobial activity of Extracts

The ethanolic extract was screened for antimicrobial potential against *Propionibacterium* acnes. The Ethanolic extracts of *Achyranthes aspera*, *Catheranthus roseus* and *Berberis arishta* gave potent antibacterial activity against *propionibacterium* and *staphylococcus* bacteria

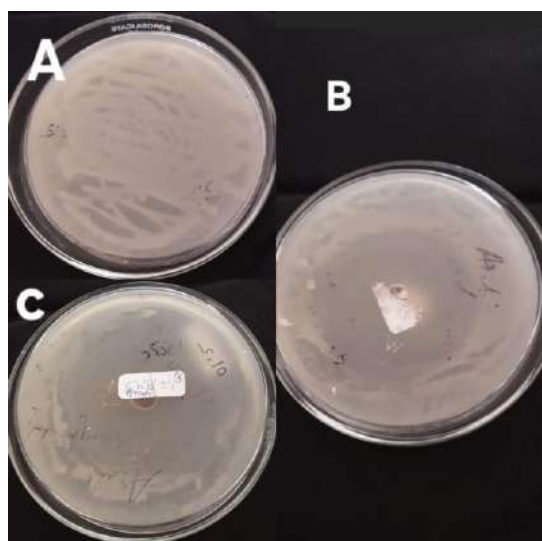


Fig no 6 Zone of inhibitions of different extracts

conclusion From the present study it can be concluded that the use of bioactive ingredients In cream.They provide good and healthy skin. The cream will be prepare with using extracts of *Berberis aristata* dried stem powder ,*achyranthes aspera* and dried powder *catharanthus roseus*.*Berberis Aristata* have good medicinal Properties. It helps in the elimination of acne, pimples And marks. Medicinal plant shows less side effect as compare to chemical compounds. *Berberis aristata* and *catheranthus roseus*,*achyranthes aspera* shows better anti-inflammatory or antioxidant.

ACKNOWLEDGMENT

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression, “One of us (R.B.G.) thanks.” Instead, try “ R.B.G. thanks”. Put applicable sponsor acknowledgment there; DO NOT place the month the first page of your paper or a safe note.

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HOW TO CITE: Shraddha Pandurang Tandale , Shrikant Hanumant Gosavi, Mohini Raghunath Suryawanshi, Pooja Wankhede, Formulation And Evaluation Of Polyherbal Cream In Acne Treatment, *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 8, 2980-2986. <https://doi.org/10.5281/zenodo.13293845>

