



Formulation and Evaluation of Polyherbal Mosquito Repellent Cream

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ABSTRACT:

Plants with mosquito-repelling properties have been employed as personal parasite protection measures. One of the several pharmacological actions of medicinal herbs and essential oils that have been documented is their ability to ward off insects like mosquitoes.

Because natural medicines are thought to be safer and have less adverse effects than synthetic ones, they are more widely accepted. The demand for herbal formulations is rising on the global market. The imitation of orange peel, neem, and other therapeutic plants like aloe vera. Utilizing plant extracts like neem and orange peel can lessen the need for chemicals in insect repellents. Herbal insect repellent creams include essential oils like castor, eucalyptus, and clove oil, as well as polyherbal extracts like neem and orange peel, although there are topical herbal formulations on the market, we suggest using polyherbal plants and oils instead. There have been reports in the literature on the effectiveness of plants and oil in repelling mosquitoes. We suggest using polyherbal plant and oil, even though there are many topical herbal formulations on the market. According to published reports, the oil and botanicals have strong mosquito-repelling properties. The ingredients used to produce the current cream formulations included Wool Fat. Aloe vera, almond oil, white soft paraffin, hard paraffin, and cetyl alcohol. A number of characteristics, including color, look, consistency, pH, spread ability, and stability, were assessed for prepared formulations. Establishing herbal formulations with polyherbal extract and oil is a really good start. There were no indications of skin irritation or instability in the produced compositions.

Keywords: Polyherbal cream (ointment type), essential oil, polyherbal extract, and evaluation parameter that repels mosquitoes.

INTRODUCTION:

Prior to discussing the mosquito repellent, how to use it, and other related topics, let's first analyze A ubiquitous flying insect found all throughout the world is the mosquito. Mosquitoes come in around 3,500 different species. They feature six long legs, a slim body, two halteres, and two pairs of scaled wings. Because the females of the majority of mosquito species feed on the blood of other animals, they are the deadliest known disease vector, having killed millions of humans over thousands of years and still killing millions annually through the spread of deadly diseases. When sprayed to skin, clothing, or other surfaces, repellent deters insects mostly those that feed on humans from landing or climbing on such surfaces. There is a plethora of mosquito species. There are repellents on the market that can shield people from infectious infections that can be fatal. In addition to performing vital biological tasks and fending off attacks by herbivorous mammals, fungus, and insects, plants are able to create a vast array of chemical substances. When ingested by humans, several of these phytochemicals have positive long-term health impacts and can be used to treat disorders in people. The Rig-Veda, written approximately 5000 years ago in India, is the oldest book in Hindu civilization and contains precise information on this topic. Unfortunately, the majority of man-made chemical repellents, particularly DEET, are easily absorbed through the skin and can result in numerous unintentional poisonings, particularly in young children. They may poison wildlife as well. DEET is thought to be a carcinogen, teratogen, and mutagen. DDT has been demonstrated to be extremely detrimental to the ecosystem. Thus, an additional, ideally non-toxic, these days, a wide variety of repellents are available that effectively ward off mosquitoes but are bad for your health since they include the toxic chemical DEET. Using a natural repellent that can make you appear unappealing to mosquitoes is acceptable.

Benefits include: -

- less irritation that is safe for the majority of Do fabrics and plastics safer for sensitive.
- skin -non-sticky, non-toxic, and environmentally friendly.
- It can be used on infants as young as three months.

Cons: -

- Expensive; reapplication may be necessary regularly to maintain complete protection.
- Since essential oils can evaporate, the effectiveness of essential oil repellents may be short-lived and require repeated applications to maintain complete protection.
- Avoid applying directly to the skin as this may cause skin disease.

Plan of work:

1. **Phase I:** Aim and selection drug.
2. **Phase II:** Formulation of Polyherbal Mosquito Repellent Cream
3. **Phase III:** Evaluation of Polyherbal mosquito repellent cream
4. **PHASE IV:** RESULT AND DISCUSSION AND CONCLUSION

PLANT PROFILE:**ALOEVERA:**

Synonym: - Aloe, musabbar, kumari.

Biological source: - Aloes is the dried juice of alco barbadenses.

Family: -Liliaceae

Chemical constituents: -Isobarbaloin, resins, aloemodin

Uses:

- Soothes sunburn and helps to fade dark spots.
- Moisturizes the skin and provides healthy aging benefits to skin.
- Help to clear up acne and treats and prevent dandruff.

NEEM:

Synonym: - Margosa

Biological name: - it is constituents of all aerial part of plant known as Azadiracta indica.

Family: - Meliaceae

chemical constituents: - A no. of chemicals isolated from neem sugiol, nimbiol, Limonoids, sulphorous, Rutin Nimabos, Myrecetin, kaemoferol.

USES:

- a. Poultice, applied to boils.
- b. In worm, jaundice and in skin disease.
- c. Ulceration of cowpox.
- d. Insect-repellent.
- e. Antiviral and antifungal.



Fig 1. Aloe vera



Fig 2. Neem

ORANGE PEEL: -**Synonym:** - Orange Cortex**Biological Source:** - orange peel is dried or fresh outer part of pericarp of the ripe or nearly ripe fruits of Citrus aurantium Linn.

Family: - Rutaceae

Chemical constituent: - volatile oil, hesperidin, isohesperidin, neohesperidin, vit.C Pectin

Glycosides, anrnatiamarin, and aurantimaric acid.

Uses: -

Its antiseptic properties, orange oil is also used in soaps, household cleaners, and detergents.

ALMOND OIL: -**Synonym:** - badam tail, bitter almond**Biological Source:** - its obtained by expression of seed of prunus amygdalus or prunus var. amara or mixture of both.

Family: - Rosaceae

Chemical constituents: - fixed oil, Amygdalin, Benzaldehyde, mucilage, protein etc.**Fig 3. Almond Oil****Uses:**

- I. Very soft, it is very pleasant to apply and leaves a velvety appearance and a soft touch to the skin.
- II. Emollient nourishes the skin and protects it from dryness.
- III. It activates and repairs skin.
- IV. It calms itching and irritation.

CITRONELLA OIL: -**Synonym:** - Mosquito Plant**Biological source:** - it is obtained by steam distillation on form the fresh leaves of Cymbopogon nardus (Linn).

Family: - Gramineae

Chemical constituents: -flavoured volatile oil Its mainly Geraniol, citronella, de-camphene Limonene, dipenten, borneol etc.**Uses:** insect repellent, biopesticide with a non-toxic mode of action. Citronella oil can be pesticides aromatherapy oil, prevent colds, fevers, and headaches it may relieve pain in**4. Materials used in formulation.****Table:1 Materials & Manufacturer/Supplier****METHODOLOGY****Preparation Of Neem Leaf Extract:**

Step 1: Use a mortar and pestle to mash the neem leaves, then transfer the mashed leaves into a pot or container.

Step 2: Pour in the water and put a lid on the pot or container.

Step 3: Steep the mixture for a minimum of three days.

Step 4: Strainer the mixture to get rid of the leaves. The extract or liquid need to be transparent.

Step 5: Add the liquid soap to another container after diluting half or one liter of the liquid with about eight Liters of water.

Step 6: The liquid evaporated, and an extract was produced.



Fig 4. Preparation Of Neem Leaf Extract

METHOD OF PREPARATION:

Transfer the ingredients (except from the crude extract) onto a China dish and melt them over a water bath.

↓
After being quickly moved into a mortar.

↓
The contents were triturated until a uniform, semi-solid mass was created with the aid of a piston.

↓
After it melted, the aloe vera and crude extract were combined with it.

↓
After that, the contents were well melted and forcefully mixed.

↓
It was cooled after that.

↓
The ointment developed after it cooled.



Fig 5. Method of Preparation

METHOD OF FORMULATION OF POLYHERBAL MOSQUITO REPELLENT CREAM: -

FORMULA: -

SR. NO.	MATERIAL	ROLE	QUANTITY
1	Neem Extract	Mosquito repellent activity Cooling and soothing effect	2.5gm
2	Orange peel extract	Mosquito repellent activity Cooling and soothing effect	2.5gm
3	Aloe Vera extract	Reduce cold sore and inflammation as well as moisturizer. Hydrate and refresh skin	3gm
4	Almond Oil	Protect skin. Rich source of Vitamin A D E	1gm
5	Citronella Oil	Mosquito repellent activity	1gm
6	Cetoserol alcohol	Antiseptic and preservative	0.5gm
7	Hard praffine	Emulsifying agent	0.5gm
8	White soft paraffin	Hydrate and refresh skin	8.5gm

Table 3: Formulation Of Mosquito Repellent Cream

EVALUATION OF POLYHERBAL CREAM:

pH measuermeant : After calibrating, the pH pepar was inserted into a beaker containing 20 mg of cream to measure the pH.

Spreadability test:

Synthesis and Assessment of Spreadability of Polyherbal Insect Repellent Cream Examine Ten ounces of the cream were divided between two slides. 100 grams of weight was put on the upper slide. The excess formulation was scraped off and the weight was eliminated. The apparatus's board was used to secure the lower slide, and a non-flexible string was used to secure the upper slide when a 20 g load was applied. The amount of time the upper slide took to slip off was recorded .

Homogeneity:

Uniformity The exam was administered through manual hand contact.

Appearance :

Look It was possible to determine the cream's appearance by looking at its color, opacity, etc.

After Feel:

Feel The emollient quality, slipperiness, and quantity of cream remaining on the skin were assessed after the herbal cream was applied.



Fig 7. After Feel

Type of Smear:

The test was carried out after the skin had been treated with ointment; an oily or watery smear had formed.

Removal:

Elimination The ointment that had been put to the skin was removed by giving the skin a gentle wash under tap water.



Fig 8. Removal

Patch Test:

Test a Patch The skin behind the ears is one of the sensitive areas of the body, and 1-3 grams of the item to be tested was administered there using a funnel or piece of cloth. A section of the skin called the lsa.m. was treated with the cosmetic under test. Control patches (made with comparable cosmetic



Fig 8. Patch Test

Irritation Test :

Test of Irritation The cream was applied to the dorsal side surface of the left hand measuring 1sq.cm. Irritation, redness, and edema were noted at equal intervals for up to 24 hours.



Fig 9. Irritation Test Antimicrobial Test:

Creation and Assessment of a Polyherbal Insect Repellent Cream Test for Antimicrobia E. Coli Asparagus Basilus Streptococcus a. The process of eliminating or suppressing the microorganisms that cause disease is known as antimicrobial activity. For this, a variety of antimicrobial agents are employed. Antibiotics can have antiviral, antifungal, or antibacterial properties. Their respective mechanisms of action vary in their ability to suppress the

RESULTS AND DISCUSSION

The w/o emulsion method was used to make the polyherbal cream (ointment type) by combining alcoholic extract of crude medications, such as neem and orange peel extract, with essential oils, such as clove, peppermint, eucalyptus, and castor. The extract was used, prepared, and found to pass every evaluation test; the results are listed in a table. The aloe vera gel had a homogenized texture, similar to smooth paste. Gel serves as a foundation. Aloe vera gel provides a smooth, hydrating texture and helps create formulations that are safe and pleasant for skin. Specific glyceemic presentations, such as skin sprays, lotions, creams, or sticks, can also be provided.

SR.NO.	PARAMETER	OBSERVATION
1.	Colour	yellowish green
2.	Odor	slightly aromatic
3.	pH	6.9
4.	Spreadability	Uniform with a spreadable
5.	Washability	Washable
6.	Consistency	Good
7.	Grittiness	No gritty
8.	Mosquito Repellent Activity	Observed
9.	Homogeneity <ul style="list-style-type: none"> • By visual • By Touch 	Homogeneous <ul style="list-style-type: none"> • Smooth • Consistent
10.	Patch Test	Not hypersensitive
11.	Irritancy test	No redness and oedema
12.	stability studies	Stable
13.	Type of smear	Slightly greasy

Table 4: Evaluation Parameter



Fig 10 .Before application



Fig11 .After application

CONCLUSION

Less equipment was needed to manufacture the mosquito repellent cream made of polyextract and oil that had the best qualities and nutritional value. The manufactured polyherbal insect repellent creams (ointment type) have an additional skin-nourishing effect in addition to their insect repellent properties. Neem extract, orange peel, and aloe vera gel were used in the development of several natural insect repellent formulations. Because of its therapeutic qualities and antimicrobial activity, neem is employed. Aloe vera, the base of our product, has numerous medical qualities and is safe to apply to skin. These natural active ingredients are well-known for their innocuous; the only ethanol added to it is to boost its efficacy. In contrast, other products utilize DEET, which is hazardous and can lead to a variety of issues. Kids can use this natural repellent because it is made primarily of plant extract, which makes it more safer. Suitable for all age groups, this repellent is non-toxic and extremely safe. A cream with an oil-in-water emulsion base was created with natural ingredients and assessed. All of these components work together to provide a polyherbal insect repellent cream that also has additional skin-nourishing benefits. When components are combined, they might have a synergistic impact that produces the finest results on skin without causing any negative side effects.

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