

Management of Sarcoptic Mange by using plant based medications; Aloe Vera & New Approach Targeted Drug Delivery; Clobetasol Propitiate

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Abstract

Scabies is not an infection, but an infestation. Scabies is a skin infestation. It is a disease of global proportions in both human and animal populations. Earlier research on scabies is very limited due to difficulty in finding the organisms. Untreated microscopic mites : *Sarcoptes scabiei* can live on skin for months and lay eggs after reproducing on the surface of skin. Till now there are 130 million cases has been registered in the world and around 18000 – 20000 cases in India. This can be detected by recognizing scabies bites and the distinctive red rash. Other symptoms can be intense itching specially at night, pimple like bumps etc. It can be transmitted through direct contact of skin. It is not a sexually transmitted disease. It can be prevented by self care by washing the clothes with hot water or dry cleaning which kills the scabies mites. Treatment involve like topical creams or lotion which are applied from neck to down and left on for 8-12 hours, and then washed off. For severe conditions tablets are also prescribed. Trigger include such as viruses, allergens, dust etc. It is not like other normal skin diseases.

Key words: Scabies; Skin disease; World Health Organization; tropical neglected disease

Introduction

Each year, scabies affects millions of people of all races, ages, and socioeconomic status. It is highly contagious, being easily spread through close physical contact and by sharing bedding, clothing, and furniture infested with mites. Scabies is estimated to infect over 300 million humans worldwide each year, including 1 million people in the United States. Scabies most frequently occurs in children and young adults, with outbreaks in child care facilities and schools common. Scabies is not an infection, but an infestation.

Scabies is a skin infestation. It is a disease of global proportions in both human and animal populations and in India 1 Million case per year on record it is documented.

The onset of symptoms of scabies varies depending on whether or not a person has previously been exposed to mites. The first time a person is exposed to the scabies mite, it can take upwards of 2 to 6 weeks for symptoms to develop.

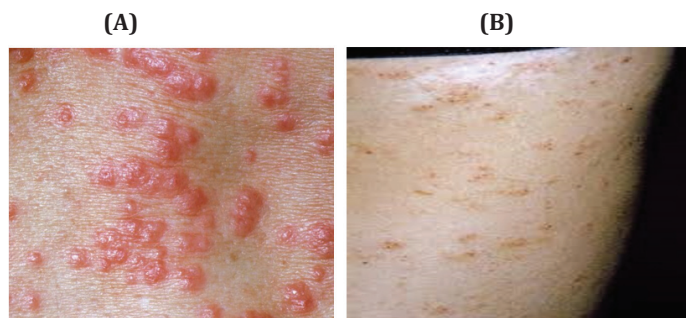


Figure 1: Patients of Scabies Symptoms.

This timeframe is significantly shorter in subsequent infestations as the body's immune system is quicker to react, typically within 1 to 4 days.

Signs and symptoms of scabies include

Itching: This is often worse at night and can be severe and intense. Itching is one of the most common scabies symptoms.

Rash: When the mite burrows into the skin, it forms burrow tracks, or lines, which are most commonly found in skin folds, and resemble hives, bites, knots, pimples, or patches of scaly skin. Blisters may also be present.

Sores: These occur in infested areas where a person has scratched at the skin. Open sores can lead to impetigo, commonly caused by secondary infection with *Staphylococcus aureus*.

Thick crusts: Crusted scabies, also known as Norwegian scabies, is a form of severe scabies in which hundreds to thousands of mites and mite eggs are harbored within skin crusts, causing severe skin symptoms.

Scabies can include these areas of the body around fingernails, armpits, waistline, inner parts of the wrists, inner elbow, soles of the feet and the breasts, particularly the areas around the nipples.

Available Treatment: Scabies is generally treated with topical medications such as 5 percent permethrin cream, crotamiton cream, or lindane lotion. In some cases, a 25 percent benzyl benzoate lotion or 10 percent sulfur ointment may be used. Most topical preparations are applied at night and washed off in the morning.

Ivermectin, an oral medication, may be recommended for people who are immunocompromised, those with crusted scabies, or those who did not respond to topical therapy. Ivermectin should not be

used during pregnancy. Should be seen by 4 weeks after treatment. Some people require more than one course of treatment to fully rid themselves of mites.

Tests and diagnosis: Need to check under microscope because it is very confusing eczema and scabies both looking similar by physical character etc.

Causes: Scabies is an infestation of the *Sarcoptes scabiei* mite, also known as the human itch mite.

Application of Aloe Vera

Possibly effective of aloe vera for the treatments are:

- Anti-acne
- Burns such as first and second degree burns
- Constipation
- Diabetes
- Genital herpes
- Itchy rashes on the skin or mouth (Lichen planus)
- Oral Submucous fibrosis
- Psoriasis
- Weight loss

Possibly insufficient evidence of aloe vera for the treatments are:

- Dandruff
- Dental plaques
- Diabetic foot ulcers
- Diaper rash
- Dry skin
- Gum diseases
- Hyperlipidemia
- Scabies

Pharmacological Involvement

The aloe is consisting of lot of micro and macro nutrients. In which the various percentage of compounds in aloe vera are polysaccharides (53%), sugars (5%), minerals (15%), proteins (7%), lipids (17%) and phenolic compounds (2%). Whilst, different types of fat soluble vitamins such as vit-A, vit-C, vit-E, and also water soluble vitamins such as vit-B1, vit-B2, vit-B3, vit-B9 respectively. The pharmacological attributes of Aloe vera have been revalidated in modern sciences which proves that drug has immense potential in pharmacotherapeutics.

Pulp Acemannan promotes dentin formation by stimulating primary human dental pulp cell proliferation, differentiation, extracellular matrix formation, and mineralization. Gingival Aloe vera gel reportedly has been used to treat gingivitis and has been effective against herpes simplex viruses. Antiseptic Properties - Aloe vera contain six antiseptic agent; lupeol, salicylic acid, urea nitrogen, cinnamonic acid, phenol and sulfur.

Background

Ethnos medicinal plants compounds are always playing a major role in the treating several types of diseases without any adverse effects compared with chemically synthesized compounds. Aloe vera is medicinal plant spread to the Mediterranean and reached the West Indies in 16th century and also indigenous to eastern and southern Africa. The word Aloe is originated from an Arabic word "aloch" meaning shining bitter substance, these are various species of aloe vera, spicata (flower and species). whereas the native Congo region of Africa used mucilage of aloe leaves for perspiration and masking human odour offering protection from wild animals and in Figure 1.2 Aloe Vera Plant is mentioned.

Therefore, there are four types of aloes are namely: 1. Curcao aloe 2. Cape aloe 3. Socotrine aloe 4. Zangibar aloe are present.



Figure 2: Aloe Vera Plant.

Plant Profile

Botanical Name: Aloe barbadensis
 Family : Liliaceae
 Kingdom : Plantae
 Clade : Tracheophytes
 Order : Asparagales
 Genus : Aloe
 Species : Vera

Plant Characters: Colour: dark brown or greenish brown, Taste: bitter, Appearance: it is a stemless or very short-stemmed plant growing in arid climate up-to the height of 60-100 cm. The leaves are thick and fleshy green that may either be spined or smoothed, stamens 6, unequal, 3 longer than corolla.

Microscopical characters: Reddish-brown irregular, angular more or less opaque fragments and also the leaves consist of epidermis, chlorenchyma, aquiferous tissues and vascular bundles xeromorphic characters.

Objective selection of aloe vera:

1. To Provide treatment that is natural with least side effects
2. To provide a better and effective treatment for the skin diseases like treatment for the skin diseases like Eczema, Scabies, Psoriasis.
3. Regulate a cost effective treatment
4. To provide a treatment with less time duration
5. To reduce the cost of treatment.

Drug profile

Temovate (clobetasol propionate) is a topical (for the skin) steroid used to treat the inflammation and itching caused by a number of skin conditions such as allergic reactions, eczema, and psoriasis. Temovate is available in generic form.

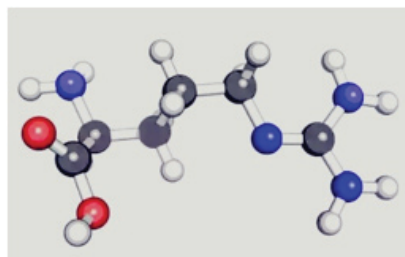


Figure 3: Clobetasol Propionate.

Parameters

1. Polaration of the scales
2. Appearance of the scales

The Aloe vera leaf gel contains about 98% water. The total solid content of Aloe vera gel is 0.66% and soluble solids are 0.56% with some seasonal fluctuation. On dry matter basis aloe gel consists of polysaccharides (53%), sugars (17%), minerals (16%), proteins (7%), lipids (5%) and phenolic compounds (2%) (Figure 1.5). Aloe vera contains 200 potentially active constituents: vitamins,

enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids, which are responsible for the multifunctional activity of Aloe 7 - 9. Vitamins: It contains Vitamins A (beta-carotene), C and E, which are antioxidants. It also contains Vitamin B12, folic acid, and choline. Antioxidant neutralizes free radicals.

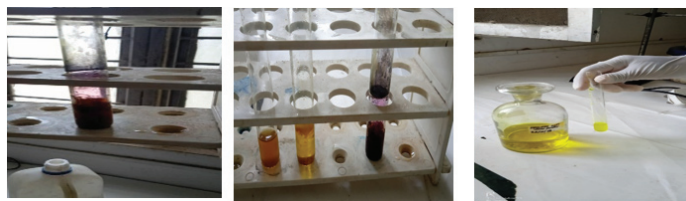


Figure 4: Phytochemical properties of Aloe Vera.

Enzymes: It contains 8 enzymes: aliase, alkaline phosphatase, amylase, bradykinase, carboxy-peptidase, catalase, cellulase, lipase, and peroxidase. Bradykinase helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats.

Minerals: It provides calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc. They are essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants.

Sugars: It provides monosaccharides (glucose and fructose) and polysaccharides: (glucmannans / polymannose). These are derived from the mucilage layer of the plant and are known as mucopolysaccharides. Recently, a glycoprotein with anti-allergic properties, called alprogen and novel anti-inflammatory compound, C-glucosyl chromone, has been isolated from Aloe vera.

Anthraquinones: It provides 12 anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin act as analgesics, anti-bacterials and anti-virals.

Fatty acids: It provides 4 plant steroids; cholesterol, campesterol, β -sisosterol and lupeol. All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties.

Hormones: Auxins and gibberellins that help in wound healing and have anti-inflammatory action

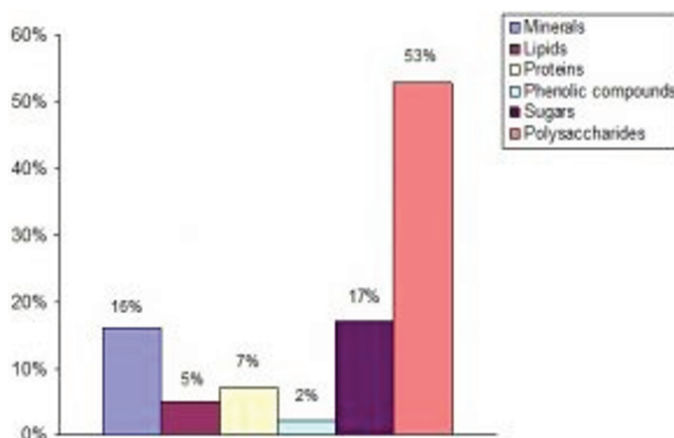


Table 1: Phytochemical Compound Details of Aloe Vera.

Materials and Method

Material was collected from previous reviews and also from patient's previous history and lab reports. HPTLC (High Performance Thin Layer Chromatography), Spectroscopy etc.

Study Design

This is the prospective study on randomly selected samples from patient of different age over a period of 6 months to 8 months using analysis as a tool. The Research will be conducted in Truba Institute of Pharmacy, Bhopal, Madhya Pradesh, India.

Methodology

Induction of Scabies: Scabies is Included among the Wistar rates by the application of 10% imiquimod cream Directly on the skin surface of the animal for 9-13 Days.

Collection of Data

1. The data is being collected from the previous reviews and is analyzed and then the experimentation will begin.
2. Data from the diseases patients.
3. Scabies Samples from various areas of Bhopal (India), Hyderabad (India), Australia

Inclusion Criteria

1. Patients with skin infections.
2. Patients with chronic diseases.
3. Patient requiring for long term therapy.
4. Patient of every age group.
5. Patients with recurrent hygiene routine.

Exclusion Criteria

1. Species/common name :- Albino Mouse
2. To targets the mechanism of action: focus on Yeast based model protocols along with preclinical Studies on animals.

Management of Scabies (A New Approach)

Formulation of Hydro Gel 20 Mg Using Externally in Management of Scabies

Materials required – salicylic acid, aloe vera gel, distilled Water.

Procedure

10% Salicylic acid, 10 Mg Aloe vera gel, Distilled water, Prepared Thick gel from Plant of Aloe Vera as per Followed standard Guideline of British Pharmacopoeia Commission.

Dosing and dosage form – Twice a days, externally applied on marks.

Side Effects – There are no side-effects observed in 6 Months study.

Although it has not been clinically proven cure of eczema but this formulation helps in its management and minimizes the eczema in its early stage.

Novel Drug Delivery Approach (New Approach) For Scabies

Nanocarrier which deliver A chemical called Clobetasol propionate, a corticosteroid used to treat various types of skin conditions, can increase the chemical solubility, enhance storage Stability, reduce adverse side effects, prolonged half-life, Targeting particular site for particular action (skin Targeted) These all Physiological Properties will increase the effectiveness of Clobetasol propionate and it penetrated infected skin and target the particular area for action. The effectiveness of Clobetasol propionate is much more effective when it compared with others medicine, creams, lotions etc the effect of Clobetasol is very much good as compared to marketed drug it is prove that this Compound is also useful for other's skin disease as well such as scabies, Plaque and Guttate Psoriasis etc.

Result

The findings documented in Figure 1.2 for easy identification of used plants, their photographs have also been given. Hence, this research proves that Aloe Vera can be used in the management and treatment of Scabies in a more effective way and with minimum side effect at a minimal cost to the patient. The important ingredient was gelling agent. The concentration of viscosity enhancer or

gel former is of immense value as a less concentration will lead to simple solution or lotion with very low consistency, while high concentration may lead to formation of gels with high viscosity leading to non-uniform distribution of drug and problem with handling of gel. Different gel formers were tried in order to select the best gelling agent. The pH of the formulation was determined in order to be sure that the formulation can be used without the risk of irritancy to the skin. The pH was found to be 6.6 ± 0.5 for gel which was very near to the neutral pH, thus the formulation can be used without the risk of irritancy to the skin.

Conclusion

Natural medicines such as herbal medicines are a safer mode of therapy because of its presumed lack of adverse side Effects. The value of medicinal plants as herbal remedies is being lost due to lacking of awareness, and deforestation. There are more than 19 Types of Natural medicine Plant Including Argemone Mexicana, Adiantum incisum, Adiantaceae, Aloe Vera, Annona squamosa L, Aristolochia Bracteolata, Cannabis sativus, Capsicum, Cassia auriculata, Holoptelea integrifolia, Momordica charantia, Ocimum Canum, etc are helpful in the management of Six Different Types of Psoriasis Naturally. First Government Or state Government should implement take immediate action to Preserve the knowledge of medicinal Plants species and Herbal remedies for the overcome of side effects it is very Essential and it also helps in Homeopathic, Unani, Ayurveda, Siddha, and Allopathic Formulations.

Conflict of Interest

There is No conflict of interest.

Acknowledgment

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