

Ethnopharmacological Studies of Aloe Vera for the Management of Eczema Followed by Molecular Techniques through Metabolomics & Novel Drug Delivery System

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Abstract

Eczema is skin very serious skin disease of skin inflammation that causes the skin to become itchy, red, swollen and painful. It is also called as Atopic dermatitis usually developed on early stage of children in India 10 million cases per year is observed. Atopic dermatitis is also passed one general to next generation & the treatment is self-diagnosable lab test or Imaging not required. Eczema developed with allergies such as asthma, cold sores etc. It usually starts on the face followed by the hands and feet. Older children tend to be affected in the elbow and knee creases, neck, wrists, ankles and feet. Genetic mutations that affect the skin's barrier function Immune system dysfunction causing an unwanted inflammatory response in the skin. Certain substances or conditions called trigger factors can cause eczema to flare (ie: become worse). Trigger including such as Irritants such as soaps and detergents, wool, skin infections, dry skin, low humidity, heat, sweating or emotional stress. Allergens such as food is also included

Keywords: Atopic Dermatitis; Genetic Mutation; Allergies; Infection; Immune System Dysfunction

Introduction

ECZEMA is an auto-immune disease, which is exactly unknown although due to over response of immune system and it is otherwise known as Atopic dermatitis. It is most common in USA. There are several types of eczema where classified as follows:

- Contact dermatitis
- Dyshidrotic eczema
- Hand eczema
- Neurodermatitis

- Nummular eczema
- Stasis dermatitis respectively.

However, it is not a contagious disease whereas, it spread all over part of the body such as (face, cheeks, chin) in infants and (neck, wrist, knees and elbows) in adults. Whilst, appearance of eczema may vary from mild to severe form. In mild stage, the skin looks dry and flaky and in severe stage it may produces skin crack, sometimes it oozes out. The common pathophysiology of eczema is expound as complex and multifactorial process, wherein involved

elements of barrier dysfunction, alteration in cell mediated response, IgE mediated hypersensitivity and environmental factors. The imbalance of Th2 to Th1 cytokines perceive in atopic dermatitis can produce alterations in the cell mediated responses and can promote IgE mediated hypersensitivity, were the one of the causes of atopic dermatitis in figure1.1. A Picture of Eczema Patient respectively [1-4].



Figure 1.1: Eczema Patient overview.

Signs and Symptoms

Eczema have different stages and its types are affected in USA approximately 3 percentage of people are affected by these conditions. While, the atopic dermatitis is the most common cause of eczema. Whereas, the Atopic refers to various diseases involving the immune system and Dermatitis refers to an inflammation of skin. Symptoms of eczema may different according to one person to another person by its age factors, it may include scaly, itchy, patches of skin and also some of food items also may produce symptoms such as nuts and dairy products [5-10].

Application of Aloe Vera

Possibly effective of aloe vera for the treatments are:

- a) Anti-acne
- b) Burns such as first- and second-degree burns
- c) Constipation
- d) Diabetes
- e) Genital herpes
- f) Itchy rashes on the skin or mouth(Lichen planus)
- g) Oral Submucous fibrosis
- h) Psoriasis
- i) Weight loss

Possibly insufficient evidence of aloe vera for the treatments are:

- a) Dandruff
- b) Dental plaques
- c) Diabetic foot ulcers
- d) Diaper rash
- e) Dry skin
- f) Gum diseases
- g) Hyperlipidemia
- h) 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 [11-15].

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 "alloch" 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 [16].



Figure 1.2: Eczema Patient overview.

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

Plant Profile

Botanical name: *Aloe barbadensis*

Family : *Liliaceae*

Kingdom : *Plantae*

Clade : *Tracheophytes*

Order : *Asparagales*

Genus : Aloe

Species : Vera

Plant Characters

- a) Colour: dark brown or greenish brown
- b) Taste: bitter
- c) 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 spinned or smoothed, stamens 6, unequal, 3 longer than corolla

d) 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

- a) To Provide treatment that is natural with least side effects
- b) To provide a better and effective treatment for the skin diseases like treatment for the skin diseases like Eczema, Scabies, Psoriasis.
- c) Regulate a cost-effective treatment
- d) To provide a treatment with less time duration
- e) To reduce the cost of treatment.

Parameters

- a) Polaration of the scales
- b) Appearance of the scales

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).

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 Eczema: Eczema is Included among the Wistar rates by the application of 5% imiquimod cream Directly on the skin surface of the animal for 9-13 Days.

Collection of Data

- a) The data is being collected from the previous reviews and is analyzed and then the experimentation will begin.
- b) Data from the diseases patients.
- c) Eczema Samples from various areas of Bhopal, Hyderabad , Chennai, Delhi, Madras India.

Inclusion Criteria

- a) 1. Patients with skin infections.
- b) 2. Patients with chronic diseases.
- c) 3. Patient requiring for long term therapy.
- d) 4. Patient of every age group.
- e) 5. Patients with recurrent hygiene routine.

Exclusion Criteria

- a) Species / common name: Albino Mouse
- b) To targets the mechanism of action: Focus on Yeast based model protocols along with preclinical Studies on animals.

Management of Eczema (A New Approach)

Formulation of Hydro gel 20 mg using externally in management of eczema.

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

Procedure

- a) 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.
- b) Dosing and dosage form – Twice a days, externally applied On marks.
- c) Side Effects – There are no side-effects observed in 6 Months study.
- d) 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 Eczema

Nanocarrier which deliver A chemical called Clobetasol propitiate, 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 propitiate and it penetrated infected skin and target the particular area for action. The effectiveness of Clobetasol propitiate 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 [17,18-20].

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 eczema 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 [21-23].

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 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*, *Cassis 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.

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