

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

Hari Baskar<sup>1\*</sup>, Umama Yezdani<sup>2</sup>, Mohammad Gayoor kha<sup>3</sup>, RidhimaBatra<sup>4</sup>, Gulafsha fatima<sup>2</sup>, Karthikeyan lakshmanan<sup>5</sup>, Raja Muthusamy<sup>1</sup>

<sup>1</sup>Department of Pharmaceutical, KMCH College of Pharmacy, Coimbatore 641048, India

<sup>2</sup>Department of Pharmaceutical science, Truba institute of Pharmacy Bhopal- 462038, India

<sup>3</sup>Department of Pharmacy Practice, MRM College of Pharmacy, Hyderabad- 501101, India

<sup>4</sup>Department of Pharmacy, School of pharmaceutical education and research, Jamia hamdard- 110062, New Delhi, India

<sup>5</sup>Department of Pharmaceutical Chemistry, College of pharmacy Madras medical college, India

\*Corresponding Author: Hari Baskar, Department of Pharmaceutical, KMCH College of Pharmacy, Coimbatore 641048, India, Email: rk981487@gmail.com

### 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 an 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 path physiology of eczema are 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 cause of atopic dermatitis in figure1.1. A Picture of Eczema Patient respectively.



Figure1.1. 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 also 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.

### 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.

### 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 16<sup>th</sup> 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.

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



Figure1.2. 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 spinned or smoothed, stamens 6, unequal, 3 longer than corolla

**Microscopical characters:** Reddish- brown irregular, angular more or less opaque fragments

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

and also the leaves consists of epidermis, chlorenchyma, aquiferous tissues and vascular bundles xeromorphic characters.

### OBJECTIVE SELECTION OF ALOE VERA

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

### PARAMETERS

- Polaration of the scales
- 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 and 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

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

#### Inclusion Criteria

- Patients with skin infections.
- Patients with chronic diseases.
- Patient requiring for long term therapy.

- Patient of every age group.
- Patients with recurrent hygiene routine.

#### Exclusion Criteria

- Species / common name :- Albino Mouse
- 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

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 day, 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 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.

## 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  $6.6 \pm 0.5$  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, 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.

## ACKNOWLEDGMENT

First of all I would like to Thank my Co- Author Ms.Umama Yezdani (Department of clinical and Pharmacy Practice) MRM college of Pharmacy Hyderabad, India, The authors are thankful to Mohammad Gayoor khan B. Pharm from Truba Institute of Pharmacy for ceaseless encouragement during the study.

## REFERENCES

- [1] Mohammad Gayoor Khan, Yezdani Umama, Hari Baskar, Kumar Ayush, Karthikeyan Lakshman, Monika Sekar. Ethno pharmacological Studies of Argemone Mexicana for the Management of Psoriasis Followed by Molecular Techniques: Focus on Plant Metabolomics & Mechanism of Action. International Journal of Basic Sciences and Applied Computing. 2019; 2(8):1-5.DOI: 10.35940/ijbsac.H0097.072819
- [2] Umama Yezdani, Mahmood Ali, Mohammad Gayoor Khan, Ayush Kumar, Prince Bhalla Mayur Sadar. Pharmacological and Non Pharmacological approaches to vitiligo. World J Pharm Sci. 2019; 8(9):884-892.
- [3] Gayoor KM, Kanta SN, Umama Y, Baskar H, Ayush K, Prasad TS. Ethnopharmacological Studies of Argemone mexicana for the Management of Psoriasis Followed by Molecular Techniques through Metabolomics. 2019; 1(1): 1003.
- [4] Karthikeyan Lakshmanan, Hari Baskar Balasubramanian, Rajasekaran Aiyalu, Arivukkarasu Ramasamy. Molecular Docking Studies of Flavones in Gentianaceae Family against Liver Corrective Targets. Research Journal of Pharmacognosy and Phytochemistry. 2019; 11(2):49-53.
- [5] Mohammad Gayoor khan. A Systemic Review on Nanoparticles. SVOA Materials Science and Technology 1:1(2019) 1-3.
- [6] Umama Yezdani, Mohammad Gayoor khan, Zubia Zainab, Mayur sadar, Shivam Choudghal, Damini Mishra, Hari Baska. The Current Scenario of Pharmaceutical Research; 3d Tissue Engineering Considered as Eminent Technique. ARC Journal of Public Health and Community Medicine. 2019; 4(2):16-22.
- [7] Shourabh Rav, et al, Novel Approach of Targeted Drug Delivery System and it's Application. ARC Journal of Public Health and Community Medicine. 2019; 4(3):1-4.
- [8] Mohammad Gayoor khan, Umama Yezdani, et al. Gold Nanoparticle Sensor for the Detection of Ckd and Use of Nano-medicine in the Treatment of Kidney Diseases. ARC Journal of Nephrology. 2019; 4(2):15-21.
- [9] Gayoor Khan, Umama Yezdani, Rohit Verma, Raqshan Jabeen, Pradeep Sintha. Detection of Phlebovirus by using qualitative Real time (RT) - PCR and application of silver nanoparticles to control it. World J Pharm Pharm Sci. 2018; 7(11):936-52.
- [10] Mohd. Gayoor Khan. The Novel Drug Delivery System. World J Pharm Pharm Sci. 2017; 6(7):477-487.
- [11] Unama Yezdani, Mohd. Gayoor Khan, Fazal Khan, Arvind Verma, Nilesh Kushwah, Rohit

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

- Verma. The Drug Targeting in Alzheimer's or Applications & its Hazards. World J Pharm Sci. 2017; 7(11):1532-1549.
- [12] Dr. H. S. Chandel., Sharad P. Panday, Arvind Dangi, Ashish Chaurasia, Mohd. Gayoor Khan et al. Development of Targeted Drug Delivery. International Journal of research methodology Ijrm. Human, 2017 Vol. 1 (2): 30-34.
- [13] Kushwah Nilesh, Yezdani Umama, Mohammad Gayoor Khan, Manish Kushwah, Kumar Ayush. The Fundamental of Novel Drug Delivery System; Methodology, Role of Nanotechnology; Nanoparticles in Pharmaceutical Research. International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN: 2349-5162, Vol. 6, Issue 6, page no. 140-146, June-2019. DOI: <http://doi.org/10.1729/Journal.21510>
- [14] Mohd. Gayoor Khan, Nilesh Kushwaha, Fazal Khan, Vipul Patel. Microencapsulation. International Journal of research methodology Ijrm. Human., 2017 Vol. 1 (2):35-42.
- [15] Umama Yezdani, Mohd. Gayoor Khan, Nilesh Kushwah, Arvind Verma, Fazal Khan. Application of Nanotechnology in Diagnosis and treatment of various disease and its future advances in medicine. World J Pharm Pharm Sci. 2018; 7(11):1611-1633.
- [16] Yezdani Umama, Venkatajah G, Rav Shourabh, Roshan Kumar, Arvind Verma, Ayush Kumar, Md. Khan Gayoor et al. Topic- The scenario of pharmaceuticals and development of microwave assisted extraction technique. World J Pharm Pharm Sci. 2019; 8(7):1260-1271.
- [17] Mohd. Gayoor Khan et al, Radiopharmaceuticals Drug interactions. IJCRP, 2017; Volume 1(5):40-47.
- [18] Dr. Umama Yezdani<sup>1</sup>, Rohit Verma, Mr. Ajay Kumar, Krishna Kumar Pandey, Mohd. Gayoor Khan et al. The fundamental & Development role of epidural steroid injection in management of herniated intervertebral disc with Radiculopathy. IJCRP, 2017; Volume 1(5):40-47.
- [19] Mohammad Gayoor Khan, et al, The Current Scenario of Pharmaceutical Research; 3d Tissue Engineering Considered as Eminent Technique. ARC Journal of Public Health and Community Medicine. 2019; 4(2):16-22. DOI: [dx.doi.org/10.20431/2456-0596.0402003](https://doi.org/10.20431/2456-0596.0402003).
- [20] Damini Mishra et al, "A Systemic Review on Nanoparticles", Journal of Genetics and Genetic Engineering, vol. 3, no. 4, 2019, pp 4-7.
- [21] Shourabh Rav, Shayam Singh Maina, Rachna Malviya, Madan Gopal Kushwah, Mohammad Gayoor Khan, Umama Yezdani. Novel approach of targeted drug delivery system and its application. International Journal of Pharmaceutical Research and Development. 2019; 1(1):19-22.
- [22] Mohammad Khan Gayoor, Yezdani Umama, Kumar Ayush, Sadar Mayur, Rav Shourabh, Sahu Lalit, Use of Nanoparticles for The Treatment of Malignant Neoplasm As a Cancer Targeted Drug Delivery System. Asian Journal of Pharmaceutical Research and Development. 2019; 7(4):84-88, DOI: <http://dx.doi.org/10.22270/ajprd.v7i4.513>
- [23] Mohd. Gayoor Khan. The Novel Drug Delivery System. World J Pharm Pharm Sci. 2017; 6(7):477-487.

**Citation:** Hari Baskar, Umama Yezdani, Mohammad Gayoor Khan, Ridhima Batra, Gulafsha Fatima, Karthikeyan Lakshmanan, Raja Muthusamy, "Ethnopharmacological Studies of Aloe Vera for the Management of Eczema Followed by Molecular Techniques through Metabolomics & Novel Drug Delivery System", *Journal of Genetics and Genetic Engineering*, vol. 4, no. 1, 2020, pp 1-5

**Copyright:** © 2020 Hari Baskar, et al.. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.