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Review Article

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Combined Studies on *Aloe Vera* and *Argemone mexicana* for the Management of Psoriasis

Nalini kanta Sahoo[1], Mohammad Gayoor khan[2*] and Umama Yezdani[3]

1Department of Pharmaceutical Analysis, Marri Laxman Reddy Institute of Pharmacy, India

[2]Department of Pharmacy, Truba Institute of pharmacy, Bhopal Madhya Pradesh India

[3]Department of pharmacy practice, MRM College of Pharmacy, Hyderabad Telangana, India

[*]Corresponding author
Mr. Md. Gayoor khan, Department of Pharmacy, Truba Institute of pharmacy, Bhopal Madhya Pradesh, India

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Abstract

Psoriasis is an autoimmune condition, which results in the body attacking itself. It occurs in the age group of 30 years to ≥ 65 years. More than 100 million individuals around the world are affected with this disease. The main objective of this study is to provide patients with more effective and safer treatment to this disease. More than 10 million cases per year in India are being recorded. Around 15% of cases emerge before the age of 10 years. In the case of psoriasis, white blood cells known as T cells mistakenly attack the skin cells. Around 80% of people have mild psoriasis, and the other 20% have moderate to severe psoriasis. There are different types of psoriasis they are Plaque psoriasis occurs in about 80-90% of people, it appears as raised, inflamed, red lesions, covered by a silvery, white scales, usually on the elbows, knees, scalp, and lower back. Inverse psoriasis appears in the different parts like armpits, the groin, under the breasts, and in other skin folds such as the buttocks and around the genitals. Aloe vera originates from the Arabian Peninsula, but grows wild in tropical, semi-tropical, and arid climates around the world. It is cultivated for agricultural and medicinal uses. The species is also used for decorative purposes and grows successfully indoors as a potted plant also used for herbal medicine and cosmetic products. Argemone Mexicana (Mexican poppy, Mexican prickly poppy, flowering thistle, cardo or cardosanto) is a species of poppy found in Mexico and now widely naturalized in many parts of the world.

Keywords: Psoriasis; Autoimmune Disease; Aloe Vera; Epidemiology; Spectrophotometric Techniques

Introduction

Psoriasis is a very common Tropical Neglected Disease in India more than 10 million cases per year are being observed. It causes the cell to build up rapidly on the surface of the skin and itchy or dry patches something painful. Psoriasis is chronic Disease it can be for years and lifetime lab test must be required Psoriasis treatments include steroid creams, occlusion, light therapy and oral medications, such as biologics. There are mainly five different types of psoriasis: plaque, guttate, inverse, pustular, and erythrodermic. Psoriasis Diagnoses based on Patient Symptoms but if Person with Darker skin the patches may be purple in colour.

The skin can trigger psoriatic skin changes at that spot Referred to as the "Koebner phenomenon ". Recently, the worldwide prevalence of psoriasis in adults ranged from 0.53 % to 13.43%. C-reactive protein (CRP) is a key Biomarker of acute-phase systemic inflammation and risk for future vascular disease. It can be diagnosed by the Elevated level of CRP, which is used as a predictor of inflammation in different diseases, including psoriasis. It was found that the level of CRP increases with the increasing number of signs of metabolic syndrome. Psoriasis is referred to as a multisystem chronic disease connected to Different co morbidities like obesity. Obesity is a relevant Risk factor for the development and complication onset of Non-communicable diseases.

Signs and Symptoms

Sometimes psoriasis cause itching On the affected part of the skin, nails, and scalp which is Referred to Plaque Psoriasis which is most common Psoriasis, treatment may not scientifically proved but Management is possible which is totally depends upon Patient past records or Medical history. The goals of Treatment are very few, less severe flare-ups. Light therapy: If the rash is more widespread, may treat it with ultraviolet Light.

Biologic drugs

Another kind of systemic drug also Targets your immune system. Biologic drugs used to treat Psoriasis include adalimumab (Humira), etanercept (Enbrel), Brodalumab (Siliq), guselkumab (Tremfya), İnfliximab (Remicade), ixekizumab (Taltz), secukinumab (Cosentyx), and ustekinumab (Stelara). They are given either by a shot or through a vein in the arm. They have affect on Specific type

of immune cell or keep certain proteins from causing inflammation. But these drugs can make it harder to fight infection.

Systemic drugs

plaque psoriasis may need medicines that work throughout the body. They calm the immune System or make skin cells grow more slowly. But they cause serious side effects, such as depression, aggressive thoughts, Liver problems, or a higher risk of skin cancer.

Plaque psoriasis

Tropical treatments especially cream are first preference it helps to reduce skin inflammation and Minimize cell growth in skin example includes Vitamin A, Vitamin D, Corticosteroid, etc. Salicylic acid and coal tar also used in the management of psoriasis and few Natural ingredients for smooth itch like Aloe vera gel etc. Topical emollients that put on after a shower or bath can help keep the skin moist. Psoriasis Vulgaris (which is also known as chronic Stationary psoriasis or plaque-like psoriasis) is the most Common form and affects 85%–90% of people with Psoriasis. Plaque psoriasis is typically appeared as raised Areas of inflamed skin covered with silvery white scaly skin.

Figure 1.1: Psoriasis on sole of foot

Figure 1.2: Psoriasis on Palms

These areas are called plaques and are most commonly found on the elbows, knees, scalp, and back. Psoriasis can affect the nails and produces a variety of Changes in the appearance of finger and toenails which Occurs in 40–45% of people with psoriasis affecting the skin and has a lifetime incidence of 80–90% in those with Psoriatic arthritis.

Background

Plants are being used in traditional medicine for several thousand years. The knowledge of medicinal plants has been collected since many centuries based on different medicinal Systems like (Ayurveda, Unani, and Siddha). It has been reported that traditional healers in India use 2500 plants Species of plants and 100 species of plants serve as regular and continuing sources of medicine. In the last few decades, there has been increased interest in the study of medicinal Plants and their traditional use in different parts of the world documenting the indigenous knowledge by ethno botanical Studies is an important aspect for the conservation and Utilization of biological resources. The important thing is the World Health Organization (WHO) shows that as many as 80% of the World's people depends on traditional medicine for their preliminary health care needs. Major parts of the World's population in developing countries still relay plants for their primary healthcare systems to treat Psoriasis. The Ethno pharmacological is the Ethno pharmacology (occasionally also called ethno pharmacy) is a related study of ethnic groups and their use of drugs. It is undoubtedly linked to medicinal plant use, ethno botany, as this is the Main delivery of pharmaceuticals. It deals with the study of The pharmaceutical means considered in relation to the Cultural contexts of their use, for example, Argemone Mexicana is used in Plaque and guttate Psoriasis and Aloe Vera is also useful for treatment of Plaque Psoriasis respectively. Ethno Medicinal Plant Argemone Mexicana used for the treatment of Psoriasis diseases. The botanical name, family name & Plant characters –Argemone Mexicana L. Papaveraceae Prickly, annuals, Flowers bright yellow, fruits prickly with blackish-brown Seeds. Local name, English name & Plant photo – Mexican Poppy, Mexican Prickly Poppy, Flowering thistle, Sathyanashi (Hindi) The name Sathyanashi is given Because of its ability to successfully treat and cure Diseases.

Figure 1.3: Plant Argemone Mexicana

Tribes name – Meena & Gurjar, Bhil etc. Plant parts used & mode of use – Fresh plant sap and paste of root powder applied externally. Districts/ Area- Madhya Pradesh, Uttar Pradesh, Rajasthan (Chhatarpur M.P, Kota, Bundi, Jhalawar Rajasthan). Remarks – Very effective in plaque and guttate Psoriasis. Ethno medicinal plant aloe vera the botanical name, family name & Plant characters – Aloe vera is a succulent plant species of the genus Aloe. An evergreen perennial, it originates from the Arabian Peninsula, but grows wild in tropical, semi-tropical, and arid climates around the world. It is cultivated for agricultural and medicinal uses. Kingdom: Plantae, Clade: Tracheophytes, Order: Asparagales, Family: Asphodelaceae, Genus: Aloe, Species: A. Vera etc. Aloe Vera gel comes from inside the leaves of aloe vera plant. It's beloved to have soothing, properties when applied to irritated, Sunburned, or environment damaged skin. The gel may also have antibacterial properties.

Figure 1.4: Plant Aloe Vera

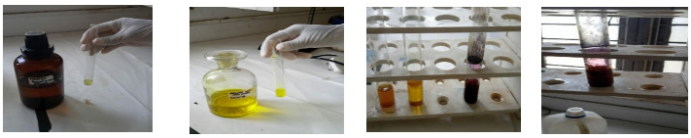
Experimental

Objective selection of argemone mexicana and 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 psoriasis.
3. Regulate a cost effective treatment.
4. To provide a treatment with less time duration.
5. To reduce the cost of treatment.

Parameters:

1. Polaration of the scales.
2. Appearance of the scales.
3. Immunohistopathology.
4. Histopathology (skin).
5. Percentage % scales reduction.
6. Role of Immune Modulation.



Phytochemical properities of A. Mexicana and Aloe Vera

Dehydrocheilanthifoline, Jatrorrhizine, Dehydrocorydalmine, Columbamine, Coptisine, Argemexicaine A, Argemexicaine B, Muramine, Oxyhydrastinine, Chelerythrine, Thalifoline - Whole plants, Sanguinarine, Dihydrosanguiranine, Dihydropalmatine hydroxide, Protopine– Seeds, Berberine, Pancorine - Aerial Parts, Dihydrochelerythrine - Tissues

The Aloe vera leaf gel contains about 98% water [1-5]. 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.

Enzymes: It contains 8 enzymes: aliiase, 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: (glucomannans / 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.

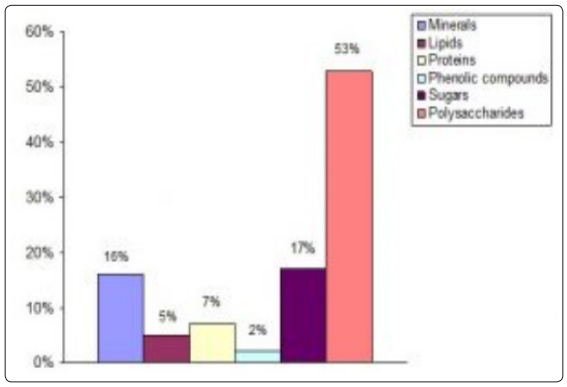


Figure 1.5: Chemical composition of Aloe vera gel

Results

The present study documented an A. mexicana plant and aloe Vera commonly used by the indigenous people of Rajasthan, Madhya Pradesh and found easily as anti-psoriatic. The findings documented in for easy identification of used plants, their photographs have also been given. Hence, this research proves that A. Mexicana and aloe vera can be used in the management and treatment of psoriasis in a more effective way and with minimum side effect at a minimal cost to the patient

Discussion

In the duration of 4 months from March 2019 to June 2019, a total of 24 patients were enrolled in the study (i.e., 12 from Bhopal, 12 from Chhatarpur) and were of different age groups. More patients were of the middle age group from 16 years to 24 years of age. Hence, it is proved that both aloe vera and argemone Mexicana combined therapy is much stronger as compared to others therapy.

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.

Materials and Methods

Material was collected from previous reviews and 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 3 months to 4 months using analysis as a tool [1-5]. The Research will be conducted in Truba Institute of Pharmacy, Bhopal, and Madhya Pradesh, India.

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. Psoriasis Samples from various areas of Bhopal, Hyderabad India.

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

Patients from some other district. Patients with some other similar condition other than psoriasis. Patients enrolling after this 4 months study.

Management of plaque psoriasis: (a new approach) Formulation of cream 20 Mg using externally in management of plaque psoriasis. Materials required- salicylic acid, Aloe Vera gel, distilled water, argemone Mexicana. Procedure- 5% Salicylic acid, 5 Mg Aloe Vera gel, Distilled water, Prepared Thick gel from root A. mexicana as per followed standard

Guideline of Indian Pharmacopoeia Commission. Dosing and dosage form- Twice a day externally applied on marks. Side effects- There are no side effects observed in 3 months study. Although it has not been clinically, proven cure of psoriasis but this formulation helps in its management and minimizes the psoriasis in its early stage.

Follow up evaluation

The patients should follow up after every 2 months to see whether the condition is being repeated or not. In this physical examination, Examination of the skin and blood samples is to be collected to get the appropriate results.

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