

**CASSIA FISTULA –PROMISING HERBAL MEDICINE FOR
PSORIASIS: A REVIEW****Fathima Mohamed Kunhi^{1*} and Arun Kumar K.V.²**

¹Department of Pharmaceutics, Rajiv Gandhi Institute of Pharmacy, Trikaripur, Kasaragode,
Kerala, 671310.

²Kerala University of Health Sciences, Thrissur.

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Corresponding Author*Fathima Mohamed Kunhi**

Department of
Pharmaceutics, Rajiv
Gandhi Institute of
Pharmacy, Trikaripur,
Kasaragode, Kerala,
671310.

ABSTRACT

Psoriasis is an auto-immune disease that ingeminates itself with repeated proliferation of keratinocytes. It globally strikes 2-5% population on an average, which is having no permanent cure. A wide range of synthetic therapeutic agents have also been reported to cause psoriasis as their side effect. Herbal drugs by virtue of their safe nature and easy availability may lend themselves as potential anti-psoriatic moieties.^[1] Cassia fistula linn also known as golden shower tree is one of the most commonly used plants in Unani and Ayurvedic medicines, useful against skin diseases with anti-psoriatic effects. The plant has documented to possess analgesic, anti-inflammatory, anti-oxidant, anti-diabetic as well as hepatoprotective activity.^[3] In Ayurvedic medicine systems, the seeds are attributed with antibilious, aperitif, carminative,

and laxative properties while the root is used for adenopathy, burning sensations, leprosy, skin diseases and syphilis. The bark and leaves are used for skin diseases like psoriasis.^[3]

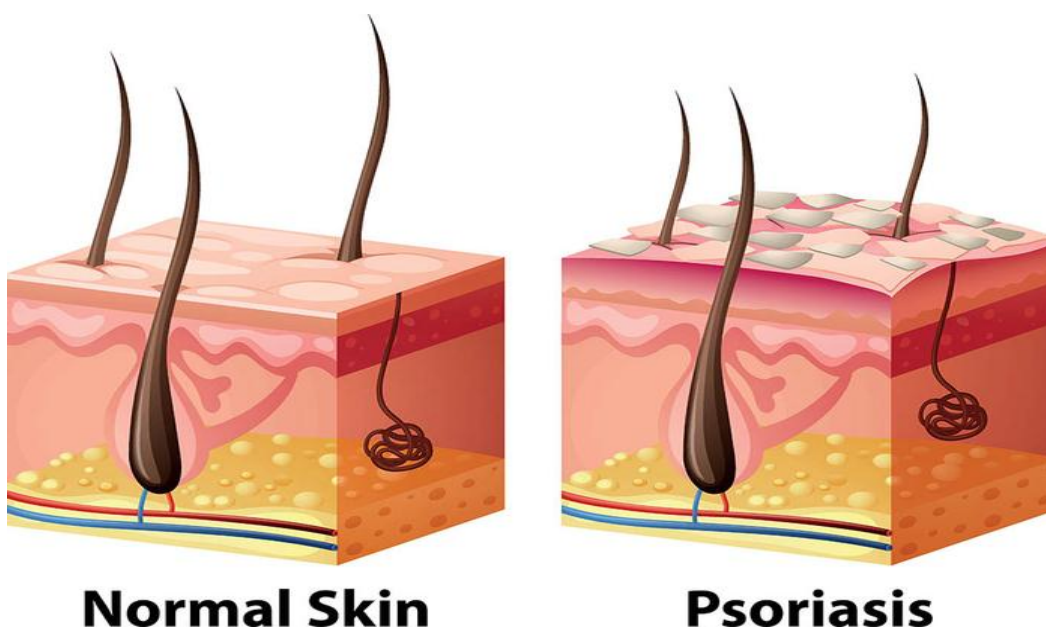
KEYWORDS: Psoriasis, Cassia fistula, Herbal treatment.

INTRODUCTION

Psoriasis is an auto immune, anti-inflammatory disease and is characterized by red, inflamed plaques and macules which appear as a result of increased proliferation and poor differentiation of keratin producing epidermal cells. These plaques are often accompanied by silvery scales. This disease sets in early stages of life and slowly progress for entire life. There is no complete cure so far for this disease. It's prevalence differs among different locations and ethnicities. Generally higher the latitude, the higher is the prevalence. Therefore

Asian and African countries are less prone to psoriasis than countries away from equator like Europe and Australia.^[1]

Inflammation is a part of body's immune response and is the end result of oxidative stress in any body part. Among various inflammatory diseases psoriasis is found to be more severe in form, though it is not infectious. Mostly affected parts in psoriasis are skin, nails and joints. It comes under papulo-squamous disorder. Here the outer layer of skin that is the epidermis moves towards the surface and then continually shed from the skin. The skin formation touches a dramatically higher turnover rate. It is an immune mediated disorder where a normal skin mistakes for pathogen, and sends a faulty signal that causes over production of new skin cells. Psoriasis is from Greek language- meaning "roughly itching condition" (psora: "itch", sis: "action").^[2]



Current treatment option exists for the reduction of signs and symptoms of the disease, complete cure is still a challenging task. Conventional Drug delivery system like topical therapies present certain limitations such as high dosing frequency, decreased drug penetration and reduced patient compliance. Toxicity associated with systemic and phototherapy also imposes limitations on conventional therapies. Therefore investigation and discovery of new efficient and safe delivery systems for the treatment of psoriasis are of great importance.

Conventional treatments**1. Topical treatments**

- Corticosteroids
- Vitamin D analogs
- Topical Retinoids
- Immunomodulators
- Coal tar
- Keratolytics

2. Light therapy

- UVB
- PUVA

3. Systemic therapies

- Methotrexate
- Cyclosporine
- JAK Inhibitors

4. Biological therapies

- TNF Inhibitors
- IL-17 Inhibitors
- IL-23 Inhibitors
- Phosphodiesterase 4 Inhibitors

Side effects of current conventional treatments**Coal Tar**

- Odor
- Staining
- Irritant Contact Dermatitis
- Erythema
- Stinging

Vit D Analogs

- Skin Irritation
- Systemic side effects including Hypercalcemia and Hypercalciuria.

Topical immunomodulators

- Stinging sensation

Salicylic acid

- Chronic/Acute systemic intoxication.

Symptoms: Oral Mucosa Burning, Frontal Headache, CNS Symptoms, nausea and vomiting.

It is also a hereditary condition but the way it inherits is still not predictable. It is a typically lifelong condition which is not having a permanent cure, but various treatments can be implemented for controlling the severity of symptoms produced by it.

Herbal drug with potent anti psoriatic activity***Cassia fistula***

Herbal drugs are being identified and developed due to their safety and ease of availability and also a wide range of synthetic drugs have also been reported to cause psoriasis as their adverse effects.

Cassia fistula^[3] also known as golden shower tree is widely used for its medicinal properties one of which is used to treat skin conditions such as psoriasis. The aim of this review is to provide information on the significance of *Cassia fistula* as an alternative to the conventional treatment of psoriasis.

Cassia fistula

Cassia fistula Linn. (Family: Caesalpinaceae), commonly known 'Sonali' or 'Bandarlati', has been used in different traditional system of medicines for various ailments since ancient times. In traditional medicine, *Cassia fistula* is one of the most commonly used plants in Unani and Ayurvedic medicines, this plant has been described to be useful against skin diseases, liver troubles, tuberculous glands and its use in the treatment of haematemesis, pruritus, leucoderm and diabetes has been suggested. Traditionally, the plant is also used as an infusion, decoction, or powder, either alone or in combination with other medicinal plants. In modern times, and in any controlled clinical trials, commercial preparations have tended to be standardized extracts of the whole plant. The plant has documented to possess analgesic, anti-inflammatory, antioxidant, antidiabetic, as well as hepatoprotective activity.

Plant description: *Cassia fistula* is a moderate sized deciduous tree 10 m tall, flowers yellow, leaves alternate, pinnate, 30-40 cm long, with 4-8 pairs of ovate leaflets, 7.5-15 cm

long, 2-5 cm broad. Fruits pendulous, cylindrical, brown, septate, 25-50 cm long, 1.5-3 cm in diameter, with 25-100 seeds. Seeds lenticular, light brown, lustrous. *Cassia fistula* grows throughout in Bangladesh and in many other Asian countries and is used as a traditional herbal medicine in India, China, Hong Kong, the Philippines, Malaysia, Indonesia, and Thailand.



The bark and leaves are used for skin diseases.

Phytochemical studies: The plant is rich in phenolic antioxidants such as anthraquinones, flavonoids and flavan-3-ol derivatives. *Cassia fistula* results shows positive for alkaloids, terpenoids, reducing sugars, saponins, tannins, carbonyl, phlobatanin, and steroids. *Cassia fistula*'s laxative actions come from a group of well documented compounds called anthraquinone. The seeds contain approximately 2% anthraquinones, 24% crude protein, 4.5% crude fat, 6.5% crude fiber, and 50% carbohydrates. The stem bark contains two flavanol glycosides and a xanthone glycosides. The leaves have been documented with 15.88% crude protein, 6.65% crude fat, 20% crude fiber, and 39.86% carbohydrates. In addition, the plant also contain fistulic acid, rhein, rheinglycoside, galactomannan, sennosides A and B, tannins, phlobaphenes, oxyanthraquinone substances, emodin, chrysophanic acid, fistuacacidin, barbaloin, lupeol, beta-sitosterol, and hexacosanol.

Flavanoids present in *Cassia fistula* bark are rich source of anti-oxidants. Flavanoids show a role in inhibition of several enzymes that are activated in the inflammatory process. *Cassia fistula* bark has a significant anti-inflammatory effect in both acute and chronic models.

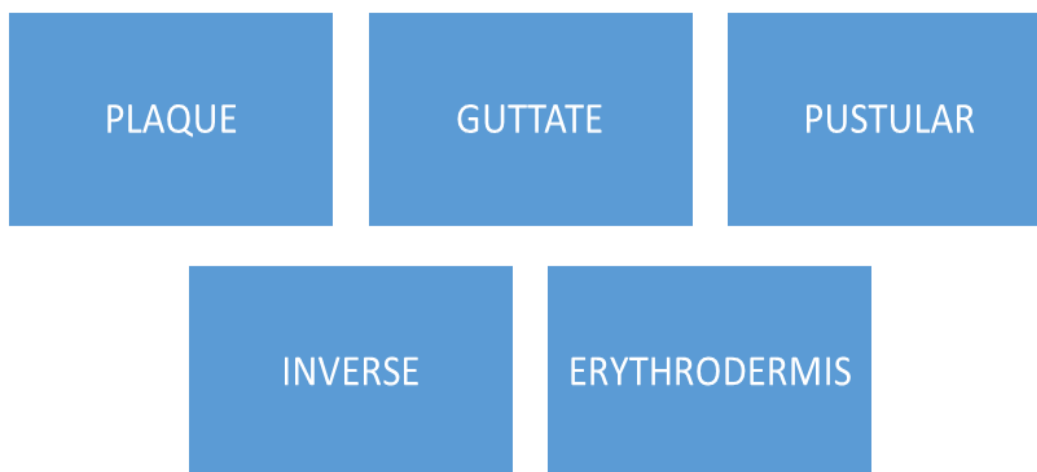
Psoriasis

1. Definition and Epidemiology

Psoriasis is a common, chronic inflammatory skin disorder, which can significantly impact the quality of life, with a strong genetic predisposition and autoimmune pathogenic traits. The worldwide prevalence is about 2%, but varies according to regions. It shows a lower prevalence in Asian and some African populations, and up to 11% in Caucasian and Scandinavian populations.



2. Clinical classification



Apart from these nail psoriasis is there, which is localized to the nails only and psoriatic arthritis is limited to joint and connective tissue inflammation. The main symptoms are irritation, red and flaky patches of skin.^[2]

2.1. Psoriasis vulgaris

Psoriasis vulgaris is also called plaque-type psoriasis, and is the most prevalent type. About 90% of psoriasis cases correspond to chronic plaque-type psoriasis. The classical clinical manifestations are sharply demarcated, erythematous, pruritic plaques covered in silvery scales. The plaques can coalesce and cover large areas of skin. Common locations include the trunk, the extensor surfaces of the limbs, and the scalp.

2.2. Inverse psoriasis

Also called flexural psoriasis, inverse psoriasis affects intertriginous locations, and is characterized clinically by slightly erosive erythematous plaques and patches.

2.3. Guttate psoriasis

Guttate psoriasis is a variant with an acute onset of small erythematous plaques. It usually affects children or adolescents, and is often triggered by group-A streptococcal infections of tonsils. About one-third of patients with guttate psoriasis will develop plaque psoriasis throughout their adult life.

2.4. Pustular psoriasis

Pustular psoriasis is characterized by multiple, coalescing sterile pustules. Pustular psoriasis can be localized or generalized. Two distinct localized phenotypes have been described: psoriasis pustulosa palmoplantaris (PPP) and acrodermatitis continua of Hallopeau. Both of them affect the hands and feet; PPP is restricted to the palms and soles, and ACS is more distally located at the tips of fingers and toes, and affects the nail apparatus. Generalized pustular psoriasis presents with an acute and rapidly progressive course characterized by diffuse redness and subcorneal pustules, and is often accompanied by systemic symptoms .

2.5 Erythrodermic psoriasis

It is an acute condition in which over 90% of the total body surface is erythematous and inflamed. Erythroderma can develop on any kind of psoriasis type, and requires emergency treatment.

Now well established that Psoriasis is a product of interactions between Environmental factors and a complex Genetic Background.

Pathogenesis of psoriasis

Pathogenesis of Psoriasis can be conceptualized into an

A. Initiation phase: Triggered by Trauma (Koebner Phenomenon), Infection or Drugs.

B. Maintenance phase: Characterized by a chronic clinical progression.

Dendritic cells are professional antigen presenting cells which plays a major role in initial stages of Disease.

Hallmark of psoriasis: Sustained Inflammation, leads to uncontrolled Keratinocyte proliferation and dysfunctional differentiation.

Histology: Acanthosis (Epidermal hyperplasia), Dermal dendritic cells, Macrophages, T cells and Neutrophils.

Prominent feature: Neovascularization.

Psoriatic plaques characterized by

1. An abnormal proliferation and differentiation of Keratinocyte leading to epidermal Hyperplasia.
2. Dermal infiltration of dermis by various immune cells.
3. Increased Dermal Capillary density with enhanced permeability in wide calibre vessels.

Psoriasis various stages of Formation

1. When Psoriasis starts you may see a few red bumps on your skin
2. They may get larger and thicker and then scales on top.
3. Patches may join together and cover large parts of your body.
4. Rash becomes itchy and uncomfortable, bleed easily if you rub/pick it.

Histopathology of psoriasis

- Regular elongation of Rete edges.
- Elongation of Dermal papillae.
- Edema of Dermal papillae.
- Dilated blood vessels.
- Thinning of suprapapillary plate.
- Intermittent parakeratosis.

Pasi score (Psoriasis Area and Severity index)

Ranges from: 0-72

Grade: 0-4

Pain and discomfort: common and severe skin symptoms. Cross sectional studies indicated psoriasis severity associated with skin sensory symptoms such as itch, pain, soreness and irritation.

Higher PASI Score more impact on skin pain, poorer quality of life, poorer satisfaction with skin condition.

Stimulus from tissue damage and inflammation produce activity in sensory Nervous system and contribute to form the patient's pain experience.

CONCLUSION

Psoriasis is a complex multifunctional inflammatory skin disease characterized by T-cell activation, local vascular changes, abnormal keratinocyte proliferation and neutrophil activation. The synthetic drugs used to treat it are having Side effects and it has been seen that some the synthetic drugs have psoriasis as adverse effect. In that case, the herbal natural remedy is the obvious alternative, which is safe and equally effective as the synthetic drug. *Cassia fistula* bark have been highlighted in this article on the basis of traditional knowledge and reports of different researchers. In Ayurveda, *Cassia fistula* is signified as "Sarvarogaprashamani" one that cures all types of diseases and shields the body against numerous microbial infections, boosts immunity, treats wounds and inflammation. The investigative parameters which are the major aspects for herbal drug screening has also been mentioned somewhere in the paper, which will hopefully help the researchers working in this area.

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