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Review Article

Ethnopharmacological Studies on Scabies by Using *Cassia occidentalis* and Ivermectin: A Combined Therapy

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Abstract

Scabies is a common infestation affecting individuals of any age irrespective of socio-economic status throughout the world but it is particularly problematic in areas of poor sanitation, social disruption and overcrowding. Scabies result in intense debilitating itching and skin papules, nodules and vesicles. In a small proportion of cases, particularly in immunocompromised and/or neurologically disabled individuals, scabies can cause secondary complication leading to mortality. Multiple drugs can be used for treatment, but resistance to conventional therapy is increasing gradually. In recent years permethrin and ivermectin have become the most relevant treatment options for scabies. However, the mites are gradually adapting resistance towards these drugs. *Cassia occidentalis* have been shown to have anti-bacterial, anti-helmenthic and many other beneficial properties. Every part of this plant have been found to be beneficial with of course, no side effects.

Keywords: *Scabies; Cassia occidentalis; Ivermectin*

Introduction

Scabies is a contagious skin disorder caused by the mite, *Sarcoptes scabiei var. hominis*, affecting population at any age, irrespective of socioeconomic status. WHO included Scabies in a Neglected Tropical Diseases (NTDs). This mite burrows into the upper layer of the skin and the female lays eggs in the tracks of the burrows. The proteins of eggs and mites produce allergic reaction and this reaction is responsible for the characteristic itching and rash [1].

Types

There are three types of scabies, however all three types are caused by the same parasite i.e. *Sarcoptes scabiei var. hominis*.

Typical scabies: This is the most common infestation. It causes itchy rash on all the common spots of the disease. However, it doesn't infest the head or scalp.

Nodular scabies: This type of scabies grows as an itchy, raised bumps or lump, especially in the genital areas, groin and armpit.

Crusted or Norwegian scabies: It is the rarest, highly contagious and more severe type of scabies. It is more common in immunocompromised and neurologically impaired individuals.

Clinical manifestation

Itching between the fingers, the wrists, axillae, groins, buttocks, genitals, and the breasts in women. In infants and young children, the palms, soles and head (face, neck and scalp) are more commonly involved [2].

With chronic infection, severe eczematous skin changes like scabies nodules may be observed particularly on the male genitalia and breasts. The predominant symptom of scabies infection is severe and persistent pruritus which can be highly debilitating [3].

In a small number of cases, severe infection characterized by diffuse hyperkeratosis, associated with variable degree of underlying erythroderma. Generalised lymphadenopathy [4] and peripheral eosinophilia [5] has been frequently observed.

Clinical grading scale for crusted scabies have been developed, which is useful for assessing disease severity and guiding treatment. The score is based on the clinical assessment of four domains: body surface area, severity/depth of skin crusting, the number of previous episodes for crusted scabies, and the degree of skin cracking and pyoderma. The scores applying to grades include: grade 1 (score 4 - 6), grade 2 (7 - 9), grade 3 (10 - 12) [6].

Transmission

Scabies is normally transmitted through skin to skin contact with individual suffering from scabies. It can also be transmitted sexually and sometimes transmitted from care providers or beddings [1].

Incubation period

The incubation period is generally 2 to 6 weeks. However, in case of relapse the symptoms may appear within 1 to 5 days of re-exposure.

Diagnosis

Scabies is diagnosed through physical examination by the presence of small erythematous papulo-vesicular lesions. Some of the lesions may be altered by excoriations, eczematisation and secondary bacterial infection. The reddish brown nodules are seen in axillary and inguinal regions, wrists and male genitalia and these may persist for several months. In Crusted scabies, Pruritus may be minimal or absent.

Microscopic identification of the mite, eggs or scybala, Dermatoscopy and digital photography helps in diagnosis of scabies.

Treatment

Permethrin 5% cream is the first-line topical therapy in the UK and the USA. Permethrin is adulticidal and ovicidal against the scabies mite and is therefore highly effective after a single application [7,8]. However, in practice the prescribed regimen often involves two applications. Adverse effects include local cutaneous reactions including erythema, burning and pruritus [9,10] which occur infrequently.

Lindane (gamma-benzene hexachloride): The 1% lotion or cream is used. Neurotoxicity may occur if it is systemically absorbed. Therefore, it is contraindicated in premature infants, patients with extensive skin disease-such as CS patients-and patients with uncontrolled seizure disorders. There are multiple reports of clinical resistance to lindane in humans [11,12].

Other treatments include anti-histamines, antibiotics, corticosteroids and emollients.

Ivermectin

Ivermectin is the only Oral drug used for scabies. Oral ivermectin is an effective and cost-comparable alternative to topical agents in the treatment of scabies infection. It may be particularly useful in the treatment of severely crusted scabies lesions in immunocompromised patients or when topical therapy has failed. Ivermectin has been used extensively and safely in the treatment of other parasitic infections.

Drawbacks of ivermectin

Ivermectin is not ovicidal. It has not been approved by USFDA for the treatment of scabies. Safety of ivermectin in pregnant and lactating women have not yet established [13]. Ivermectin is associated with minor, self-limiting elevations of serum aminotransferase and also rare instances of clinically apparent liver injury. It is contraindicated in children under the age of five or those who weigh less than 15 kilograms [14] and individuals with liver or kidney disease [15]. A separate review found that although oral ivermectin is usually effective for treatment of scabies, it does have a higher treatment failure rate than topical permethrin [15].

Chemical structure of ivermectin

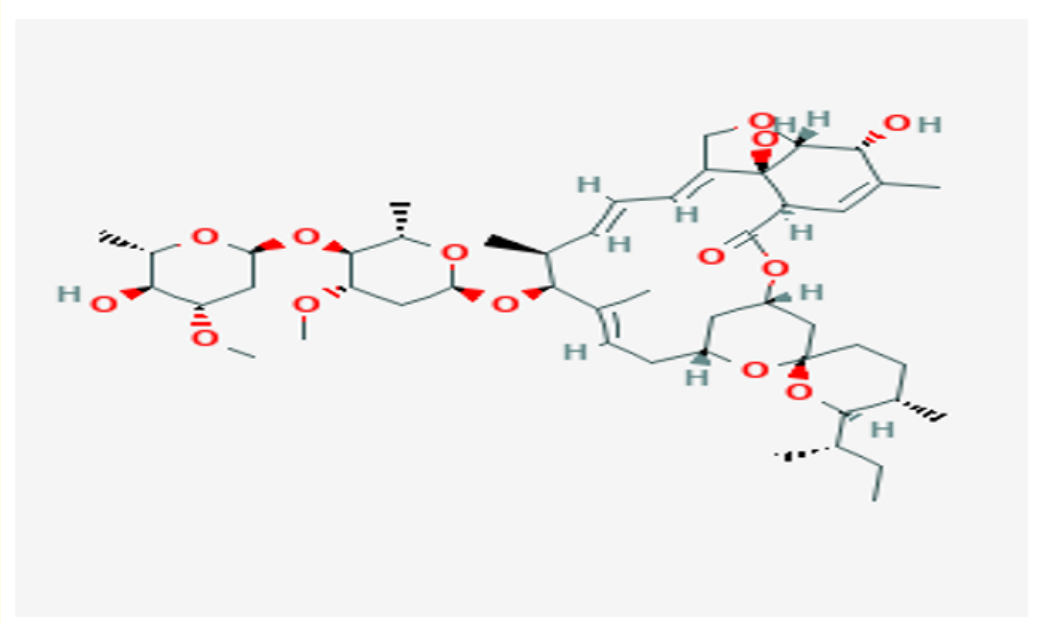


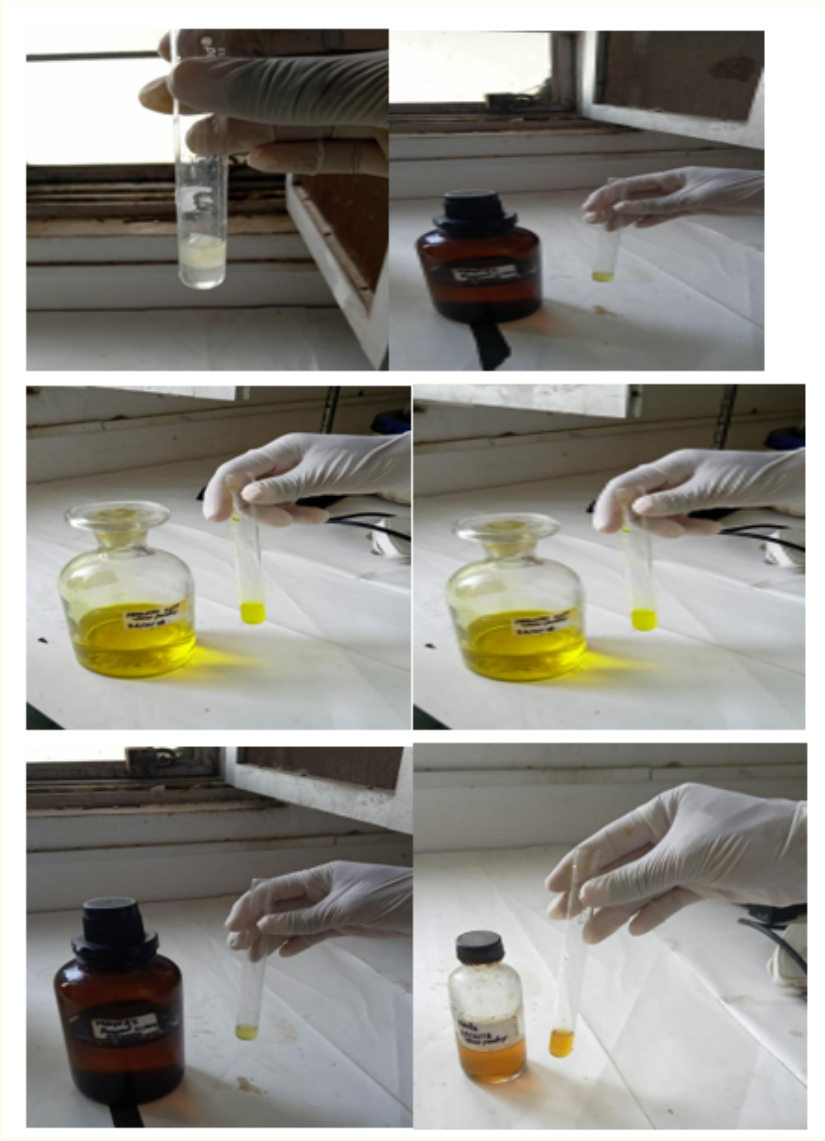
Figure 1: *22,23-dihydroavermectin B1a + 22,23-dihydroavermectin B1b.*

Cassia occidentalis

Cassia occidentalis is a commonly used and widely distributed plant, belonging to family Fabaceae. Leaves were used externally and internally in skin diseases, itches, scabies and ringworm. For, the past decades there has been an increasing interest in the pharmacological investigation of different extracts of the plants as a source of new drugs.

Phytochemical test of Cassia occidentalis

We have successfully performed the phytochemical analysis of *Cassia occidentalis* and found various chemicals like Alkaloid, Tannins, Phenolic Compound, Carbohydrate and Glycoside respectively.



Figure

Conclusion

This comparative combined and experimental study concludes that *Cassia occidentalis* is better for the treatment of scabies compared to ivermectin. Since, the mites are slowly adapting resistance against drugs. It is necessary to look for a pharmacological effect of a natural product which may have no or very less side effects.

Conflict of Interest

Author contributes that there is no conflict of interest.

Bibliography

1. Dhana A., *et al.* "Ivermectin versus permethrin in the treatment of scabies: A systematic review and meta-analysis of randomized controlled trials". *Journal of the American Academy of Dermatology* 78.1 (2018): 194-198.
2. Heukelbach J., *et al.* "Epidemiology and morbidity of scabies and pediculosis capitis in resource-poor communities in Brazil". *British Journal of Dermatology* 153.1 (2005): 150-156.
3. Chandler DJ and Fuller LC. "A Review of Scabies: An Infestation More than Skin Deep". *Dermatology* 235 (2019): 79-90.
4. Deshpande AD. "Eosinophilia associated with scabies". *Practitioner* 231.1427 (1987): 455.
5. Sluzevich JC., *et al.* "Persistent eosinophilia as a presenting sign of scabies in patients with disorders of keratinization". *Archives of Dermatological Research* 143.5 (2007): 670-673.
6. Davis JS., *et al.* "A novel clinical grading scale to guide the management of crusted scabies". *PLOS Neglected Tropical Diseases* 7.9 (2013): e2387.
7. Taplin D., *et al.* "Community control of scabies: a model based on use of permethrin cream". *Lancet* 337.8748 (1991): 1016-1018.
8. Purvis RS and Tyring SK. "An outbreak of lindane-resistant scabies treated successfully with permethrin 5% cream". *Journal of the American Academy of Dermatology* 25.6-1 (1991): 1015-1016.
9. Mushtaq A., *et al.* "Comparison of efficacy and safety of oral ivermectin with topical permethrin in treatment of scabies". *The Journal of Pakistan Association of Dermatologists* 20.4 (2010): 227-231.
10. Sharma R and Singal A. "Topical permethrin and oral ivermectin in the management of scabies: a prospective, randomized, double blind, controlled study". *Indian Journal of Dermatology, Venereology and Leprology* 77.5 (2011): 581-586.
11. Purvis RS and Tyring SK. "An outbreak of lindane-resistant scabies treated successfully with permethrin 5% cream". *Journal of the American Academy of Dermatology* 25.6-1 (1991): 1015-1016.
12. Roth WI. "Scabies resistant to lindane 1% lotion and crotamiton 10% cream". *Journal of the American Academy of Dermatology* 24.3 (1991): 502-503.
13. Fawcett RS. "Ivermectin use in scabies". *American Family Physician* 68.6 (2003): 1089-1092.
14. Dourmishev AL., *et al.* "Ivermectin: pharmacology and application in dermatology". *International Journal of Dermatology* 44.12 (2005): 981-988.
15. Siddiqui K., *et al.* "The efficacy, safety, and tolerability of ivermectin compared with current topical treatments for the inflammatory lesions of rosacea: a network meta-analysis". *Springer Plus* 5.1 (2016): 1151.

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