



Psoriasis and indigo naturalis as a treatment

Mohammad Imani (MD)^{1*}, Mohammad Javad Yazdanpanah (MD)¹, Hoda Azizi (MD)², Toubah Ahmadzadeh Sani (MD)³, Mahnaz Banihashemi (MD)¹, Hamid Reza Bahrami-Taghanaki (MD)², Mohammad Khajedaluae (MD)⁴

¹Cutaneous Leishmaniasis Research Center, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

²Department of Complementary Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

³Department of Pharmacology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

⁴Department of Social Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO

ABSTRACT

Article type

Review article

Article history

Received: 24 Feb 2014

Revised: 6 Apr 2014

Accepted: 15 Apr 2014

Keywords

Herbal drugs

Indigo naturalis

Psoriasis

Psoriasis is an inflammatory and proliferative disease. Psoriasis clinical features vary from plaque-type psoriasis to pustular form. Psoriasis is an immune-mediated disease, which affects epidermal keratinocytes. Regard to serious side effects of chemical therapy in psoriasis patients, various projects were performed all around the world to find new therapeutic approaches for psoriasis. Various studies confirmed that Indigo naturalis treatment induced long-term remission in patients with psoriasis in all ages.

Please cite this paper as:

Imani M, Yazdanpanah MJ, Azizi H, Ahmadzadeh Sani T, Banihashemi M, Bahrami-Taghanaki HR, Khajedaluae M. Psoriasis and Indigo naturalis as a treatment. Rev Clin Med. 2014;1(3):131-134.

Introduction

Psoriasis is an inflammatory and proliferative disease (1). Psoriasis clinical features vary from plaque-type psoriasis to pustular form (1,2). Psoriasis prevalence depends on ethnicity. African-American and Native American population rarely develop psoriasis. Psoriasis occurs in 2 to 4 percent of United States population. Its

incidence is estimated to be 1.5-3 percent in Europe (3). Psoriasis is more common in Japan in comparison with China. Male/female ratio is 1. Most cases occur before 46 years of age and patient mean age is 33. Although psoriasis male/female ratio is 1, women develop disease in earlier ages in comparison with men (4). One-third

***Corresponding author:** Mohammad Imani
Cutaneous Leishmaniasis Research Center, School of
Medicine, Mashhad University of Medical Sciences,
Mashhad, Iran

E-mail: dr_imani2008@yahoo.com

Tel:051 -38012861

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

of patients with psoriasis have a first or second-degree relative with psoriasis (5).

Pathophysiology

Psoriasis is an immune mediated disease, which affects epidermal keratinocytes. Different studies demonstrated that psoriasis could be controlled by immunosuppressive agents (5). There are numbers of reports of psoriasis development in patients who have been undergone bone marrow transplant from psoriatic donor. Skin is considered as a lymphoid organ, which contains mast cells, fibroblasts, granulocytes and T lymphocytes (6). Keratinocytes synthesize cytokines. Various stimulators could activate immune response in skin such as infections, chemical agents and sunlight or ultraviolet light (7). It is confirmed that T cells play initial role in psoriasis. CD₄ and CD₈ lymphocytes infiltrate in psoriasis lesions. Moreover, psoriatic plaque contains interferon gamma, interleukin-2 and 12. There is an association between HLA-Cw6 and psoriasis. Changes in 9 parts of chromosome (PSORS1-9) might lead to psoriasis (8). Nutritional deficiency such as omega-3, folic acid and vitamin B-12 deficiencies might be triggers for psoriasis or its flare-up (9).

Clinical features

Psoriasis could decrease patients' quality of life. Many co-morbidities are also associated with psoriasis such as type 2 diabetes mellitus, Crohn disease, metabolic syndrome and psoriatic arthritis. Malignancy might occur in patients received immune suppressive treatment. New investigation showed a relation between psoriasis and cardiovascular disease (4-6).

Scaling plaques and papules are main characteristics of psoriasis. Lesions are well-defined and dry with gray or silver scales. Skin lesion distribution is symmetric. Plaques and papules occur on

elbow, lumbosacral, knee, scalp or body folds. Psoriasis is a Koebner's phenomenon positive disorder and lesions develop after trauma (5). Oral mucosa and tongue might be involved in psoriasis and lead to geographic tongue appearance. Clinical types of psoriasis include plaque form, erythroderma, flexural, guttate, generalized pustular, palmoplantar and nail disease. Plaque form psoriasis (psoriasis vulgaris) is the most common type. Nail involvement occurs in 50 percent of patients (2,6).

Twenty-five percent of patients with psoriasis develop arthritis and in 10 percent of them articular symptoms occur before skin lesions. Psoriasis arthritis is a seronegative disorder, which presents as an oligoarthritis (4).

Treatment

Psoriasis treatment method depends on disease expansion and severity. The treatment of mild psoriasis with limited lesions is using topical corticosteroid, vitamin D3 analogues, retinoid, anthralin and phototherapy. Salicylic acid shampoo is used for scalp lesions (10).

Oral agents and systematic treatment would be administered in patients with severe disease. Methotrexate, retinoids, cyclosporine and biologic drugs are used in these patients. Retinoid agents are teratogenic. Biologic drugs interfere with T cells such as Efalizumab and Alefacept. Cyclosporine is a toxic drug, which could lead to renal failure and liver dysfunction. Methotrexate is a potent toxic agent, which is myelosuppressive agent and could induce liver fibrosis (11).

Natural treatment

Regard to serious side effects of chemical therapy in psoriasis patients, various projects were performed all around the world to find new therapeutic approaches for psoriasis.

Some studies concluded that use of antioxidant diet could prevent disease flare-up such as omega-3 and omega-6. Traditional Chinese medicine introduced many herbal drugs, which were used as seasonings. These herbs included garlic, ginger, red pepper, rosemary and indigo naturalis (12).

Recent studies demonstrated that indigo naturalis was an anti-inflammatory and anti-tumoral agent and inhibited malignant cell proliferation (13-15). Indigo naturalis is derived from stem and leaves of an herb called *Baphicacanthus cusia* in Chinese literature (13). This herb was administered orally in patients with psoriasis (14). In recent years, effect of topical extract of indigo naturalis has been shown. To best of our knowledge, topical indigo naturalis efficacy was first reported in Taiwan (14). Indigo naturalis is a powder in dark blue. Lin et al. confirmed that Indigo naturalis modified cell proliferation, apoptosis and cell differentiation particularly in keratinocytes. Applying this herb led to epidermal normal physiologic function (14). In his study 74 percent of patients treated completely with Indigo naturalis ointment. Nail psoriasis was difficult to be treated (13). Chaing showed that topical indigo naturalis improved nail psoriasis; particularly in patients who had co-existing fungal nail disease (15). It is not clear whether indigo naturalis could prevent pathogen growth, improve nail conditions and recover normal protective nail layer or not. Childhood psoriasis treatment is an important issue, because its long-term complication and safety should be considered (13). There were some evidences that indicated that indigo naturalis was effective in childhood psoriasis, so more investigations should be performed to proof this idea. Some studies revealed that short-term remission occurred in herbal drug combination with anti-psoriatic pharmacotherapy (APP) (16).

Traditional herbal drugs are considered as anti-inflammatory and anti-angiogenic agents that regulate cytokine secretion. Availability and natural origin of such drugs make them popular. It is estimated that more than 50 percent of patients with psoriasis use herbal drugs as an alternative treatment (10).

The side effects, dosage, and composition of these herbs have not been recognized yet. Most common adverse events after orally administered indigo naturalis are gastrointestinal complications; severe complication was also reported such as liver injury. Hematologic index and liver and renal function test were normal in patients used topical indigo naturalis (12). Indigo naturalis does not easily soluble in water and it is poorly digested and absorbed by gastrointestinal tract. Therefore, its topical use might be associated with fewer complications (13). One of indigo naturalis side effects is liver damage, thus its combination with methotrexate might be harmful.

Conclusion

Various studies confirmed that indigo naturalis treatment induced long-term remission in psoriatic patients in all ages. Nevertheless, regard to the common belief that "herbal drugs are safe", many side effects do not report by patients. Therefore, clinicians should be aware of probable side effects. On the other hand, there are not enough clinical trials in which indigo naturalis efficacy and safety have been confirmed, thus children and elderly should be observed closely.

Acknowledgement

We would like to thank Clinical Research Development Center of Ghaem Hospital for their assistant in this manuscript. This study was supported by a grant from the Vice Chancellor for Research of the Mashhad

University of Medical Sciences for the research project as a medical student thesis with approval number of 87691.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Simonetti O, Lucarini G, Goteri G, et al. VEGF is likely a key factor in the link between inflammation and angiogenesis in psoriasis: results of an immunohistochemical study. *Int J Immunopathol Pharmacol.* 2006;19:751-760.
2. Capon F, Munro M, Barker J, et al. Searching for the major histocompatibility complex psoriasis susceptibility gene. *J Invest Dermatol.* 2002;118:745-751.
3. Mrowietz U, Elder JT, Barker J. The importance of disease associations and concomitant therapy for the long-term management of psoriasis patients. *Arch Dermatol Res.* 2006;298:309-319.
4. Wu T, Jin X, Zhang M, et al. Traditional Chinese herbs for psoriasis (protocol). *Cochrane Database Syst Rev.* 2009;1:1-7.
5. Zhang CM, Wei G, Zhang CH, et al. Clinical efficacy of Chinese medicine fumigation combined ultraviolet radiation in treating psoriasis vulgaris and its effect on the psoriasis serum Th1/Th2 type cytokines. *Chin J Phys Med Rehabil.* 2009;31:491-492.
6. Melnikova I. Psoriasis market. *Nat Rev Drug Discov.* 2009;8:767-768.
7. Bos JD, de Rie MA, Teunissen MB, et al. Psoriasis: dysregulation of innate immunity. *Br J Dermatol.* 2005;152:1098-1107.
8. Chiang YR, Li A, Leu YL, et al. An in vitro study of the antimicrobial effects of indigo naturalis prepared from *Strobilanthes formosanus* Moore. *Molecules.* 2013;18:14381-14396.
9. Weidemann AK, Crawshaw AA, Byrne E, et al. Vascular endothelial growth factor inhibitors: investigational therapies for the treatment of psoriasis. *Clin Cosmet Investig Dermatol.* 2013;6:233-244.
10. Langley RG, Krueger GG, Griffiths CE. Psoriasis: epidemiology, clinical features, and quality of life. *Ann Rheum Dis.* 2005;64:8-23.
11. Gottlieb AB, Strober B, Krueger JG, et al. An open-label, single-arm pilot study in patients with severe plaque-type psoriasis treated with an oral anti-inflammatory agent, apremilast. *Curr Med Res Opin.* 2008;24:1529-1538.
12. Lin YK, Wong WR, Su Pang JH. Successful treatment of recalcitrant psoriasis with Indigo naturalis ointment. *Clin Exp Dermatol.* 2007;32:99-100.
13. Lin YK, Chang CJ, Chang YC, et al. Clinical assessment of patients with recalcitrant psoriasis in a randomized, observer-blind, vehicle-controlled trial using indigo naturalis. *Arch Dermatol.* 2008;144:1457-1464.
14. Lin YK, Yen HR, Wong WR, et al. Successful treatment of pediatric psoriasis with Indigo naturalis composite ointment. *Pediatr Dermatol.* 2006;23:507-510.
15. Verucchi G, Calza L, Attard L, et al. Acute hepatitis induced by traditional Chinese herbs used in the treatment of psoriasis. *J Gastroenterol Hepatol.* 2002;17:1342-1343.
16. Tse TW. Use of common Chinese herbs in the treatment of psoriasis. *Clin Exp Dermatol.* 2003;28:469-475.