

Review

Traditional topical herbal therapies in psoriasis

Havva Ozge Keseroglu¹, Müzeyyen Gönül^{2,*}

¹Havva Ozge Keseroglu, MD, Specialist, Ankara Dışkapı Yıldırım Beyazıt Education and Research Hospital, Dermatology Clinic, Ankara, Turkey; ²Müzeyyen Gönül, MD, Associate Professor, Ankara Dışkapı Yıldırım Beyazıt Education and Research Hospital, Dermatology Clinic, Ankara, Turkey

ABSTRACT

Psoriasis is a common, chronic, recurrent, immune-mediated inflammatory disorder of skin. Although conventional topical and systemic therapies yield remission for a while, they carry a risk of many side effects that limit the long term use of these agents and the disease recurs generally in a short period of time after cessation of therapy. An increasing number of psoriatic patients are using herbal products as a treatment to control their disease with less side effects. Clinicians should be aware of plants used in psoriasis and side effects related with them. The aim of this article is to review the different herbs used in psoriasis treatment.

Keywords psoriasis, topical herbal therapy, phytotherapy

INTRODUCTION

Psoriasis is a common, chronic, recurrent and immune-mediated inflammatory disorder characterized by circumscribed, red, thickened plaques with an overlying silver-white scale. Although the prevalence of psoriasis varies depending on ethnicity, approximately 2% of the world's population suffers from this disease (Schon and Boehncke, 2005). It may affect any parts of the body with a predilection of scalp, knees, elbows, and lower back. The range of clinical presentation might vary from a single plaque to involvement of more than 90% of the skin. Conventional treatment of psoriasis is based on severity of the disease (Traub and Marshall, 2007). Topical treatment is the first line for patients with mild to moderate or limited psoriasis (Rahman et al., 2012) and glucocorticoids are the most commonly preferred ones (Thangapazham et al., 2007). Although glucocorticoid treatment is effective, the prolonged use results in cutaneous atrophy and rebound of disease on discontinuation (Traub and Marshall, 2007). On the other hand, conventional systemic treatments have a risk of serious side effects, such as hepatotoxicity (methotrexate), nephrotoxicity (cyclosporine), teratogenicity (oral retinoids) and cancer (PUVA, cyclosporine) (Yuqi, 2005). New biological drugs that block T-cell activation and TNF- α , carry possible risks of reactivation of latent tuberculosis, hepatotoxicity, lymphoma, and congestive heart failure, which limits their long term use (Traub and Marshall, 2007). Psoriasis is not totally curable disease because of its chronic relapsing nature, so the aim of the treatment is to provide only remission. Unfortunately, the disease recurs generally in a short period of time after cessation of therapy (Yuqi, 2005). One should keep in mind that like many other

skin disease, the visible nature of psoriasis brings additional psychosocial burden and patients want to achieve lesion free period as soon as possible. So, many patients with psoriasis look for another treatment options to control their disease with less side effects (Smith et al., 2009).

Complementary and alternative medicine (CAM) is defined as "a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine" (Smith et al., 2009). The prevalence of CAM use among psoriatic patients was found to be between 42.5 - 69% in different studies (Clark et al., 1998; Gonul et al., 2012; Jensen, 1990). Phytotherapy, which means treatment with products prepared from herbs, spices, roots, stems or other parts of fresh or dried plants or extracted plant material, was reported as the most frequently used CAM modality among patients with psoriasis (Gonul et al., 2012). Herbal therapies are greatly accepted by the patients because it is believed to be safer than conventional therapy. Actually, many of these products lack evidence of safety and efficacy. In the realm of increasing popularity of herbal therapies, clinicians should be aware of current scientific data about these products. We intended to review different herbal therapies used in psoriasis in this article. The plants were discussed in an alphabetical order in the text and traditional chinese herbal medicine was mentioned shortly at the end.

Aloe vera (Aloe Barbadensis Miller)

Aloe vera, which belongs to Liliaceae family, has been used therapeutically since 1750 BC (Dhanabal et al., 2012). Aloe vera gel is made from the colorless tissue in the centre of the aloe vera leaf and is used in some medical and cosmetic products including sunscreen products, topical moisturizing lotions, etc. (Vogler and Ernst, 1999). Aloe juice (aloe sap or aloes), which is different from aloe vera gel, is a term used for intensely bitter, yellow latex produced from the peripheral bundle sheath of aloe vera and contains anthraquinones, which have strong laxative effects (Vogler and Ernst, 1999). While aloe vera gel was used alone in some studies, total leaf extract

*Correspondence: Müzeyyen Gönül
E-mail: muzeyyengonul@gmail.com

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was used in most of them, so one should pay attention to which part of the leaf used when comparing the results of studies. Aloe vera has anti-inflammatory, antimicrobial, antipruritic, wound-healing and analgesic properties (Dhanabal et al., 2012; Vogler and Ernst, 1999). The antipsoriatic activity of aloe vera leaf extract was also shown in vitro by using a mouse tail model of psoriasis (Dhanabal et al., 2012).

There are conflicting results about efficacy of aloe vera in psoriasis. In a randomized, double-blind, placebo-controlled study, Syed et al. compared the efficacy and tolerability of cream containing 0.5% aloe vera extract three times a day with placebo cream for 4 weeks with an 12-months follow-up in 60 patients with mild to moderate chronic, plaque type psoriasis (Syed et al., 1996). At the end of the study, aloe vera extract 0.5 % in a hydrophilic cream was found to be more effective than placebo. The mean Psoriasis Area Severity Index (PASI) decreased from 9.7 to 2.2 in aloe vera group versus 8.9 to 8.2 in the placebo group. The cure rate was found to be significantly high in aloe vera group (83.3% vs 6.6%, $p < 0.001$). The cream was well tolerated and no adverse effect was noted.

Paulsen et al. conducted another double-blind, placebo-controlled, right/left comparison study of a commercial, aloe vera gel twice daily on 41 patients with moderate psoriasis but showed only a modest effect which was not superior to placebo (Paulsen et al., 2005). Dryness was reported to be the most frequent local side effect. Stinging, soreness, fissures, and erythema was also reported in a few patients.

In 2010, Choonhakarn et al. randomized 80 patients with mild to moderate plaque psoriasis to receive either aloe vera or 0.1% triamcinolone acetonide cream. The cream was applied twice daily for 8 weeks (Choonhakarn et al., 2010). At the end of the study aloe vera cream was found to be more effective than 0.1% triamcinolone acetonide. Aloe vera was generally well tolerated and no serious side effect was reported. Only six patients receiving aloe vera cream complained about stinging and itching at the site of the lesion and after antihistaminic treatment these symptoms disappeared.

Ammi majus (Bishop's Weed)

Psoralens are photosensitizers and in combination with ultraviolet A irradiation (PUVA) inhibit abnormal keratinocyte growth. Methoxsalen (8-methoxypsoralen (8-MOP)) is the most potent psoralen which is originally isolated from the ammi majus (Reuter et al., 2010). The antipsoriatic effect of 8-MOP in the form of cream, bath additive or systemic use in combination with phototherapy was shown in many clinical studies, and today widely used in treatment of psoriasis (Asawanonda et al., 2008; Berneburg et al., 2013; Markham et al., 2003). But, hyperpigmentation and phototoxic erythema reactions were reported as a side effect (Ehsani et al., 2011; Höningsmann and Schwarz, 2012).

Andira araroba (Araroba tree, Goa tree)

Dithranol (cignolin, anthralin) is one of the most effective topical treatment of psoriasis. While today manufactured synthetically, in the past it was obtained from chrysarobin, a component of the bark of the araroba tree found in the rain forests of the Amazon. Dithranol acts via inhibiting the release of proinflammatory cytokines and the proliferation of keratinocytes, and normalizing keratinocyte differentiation in psoriasis (Menter et al., 2009; Reuter et al., 2010). In a multicenter study, van de Kerkhof PC et al. randomized 106

patients to receive calcipotriol ointment twice daily or dithranol cream once a day. At the end of the study, dithranol was found to be superior to the calcipotriol treatment (van de Kerkhof et al., 2006). Dithranol is a good alternative especially for patients who are not eligible for phototherapy, systemic treatments or biologics (van de Kerkhof et al., 2006). Moreover, it was shown to be safe and efficacious for the treatment of children with psoriasis and should be tried before ultraviolet or any systemic treatments (de Jager et al., 2010). The irritation and staining of lesional and perilesional skin are the most common side effects related with anthralin usage (Menter et al., 2009). The pregnancy category of anthralin is C.

Avocado (*Persea americana*) oil combined with vitamin B12

Avocado oil is rich in biologically active compounds including sterols, tocopherols, squalene and lipidic furans. It also contains vitamins (mainly vitamin E), proteins, beta-carotene, lecithin, fatty acids and potassium. It is used for cosmetic purposes because of very high skin penetration and rapid absorption. It has an excellent moisturising, wound healing and anti-inflammatory activity (Nayak et al., 2008; Stücker et al., 2001).

Stücker M. et al compared vitamin B12 cream containing avocado oil with calcipotriol in a randomized, prospective, half-side comparison study in 13 patients with plaque-type psoriasis (Stücker et al., 2001). The cream was applied twice daily for 12 weeks. At the end of the study, combination of vitamin B12 and avocado oil was shown to be as effective as calcipotriol cream with regard to PASI score without any adverse effects. In addition, they observed a marked decrease in efficacy of calcipotriol cream after 4 weeks of therapy, while the efficacy of the combined cream containing avocado oil remained largely constant during the 12 weeks. So they concluded that vitamin B12 cream containing avocado oil might be suitable for especially long-term therapy. But further studies with more patients and vehicle control are needed to confirm these results.

Bitter melon (*Momordica charantia*)

Bitter melon is a vine belonging to the family Cucurbitaceae, widely found in Asia, Amazon, Africa, and the Caribbean. It has an edible fruit, which is extremely bitter. It has traditionally been used for the treatment of psoriasis. It was reported that inhibiting activity of guanylate cyclase enzyme might be the mechanism of action in the treatment of psoriasis but the efficacy and safety of bitter melon has not been shown yet in controlled clinical trials (Grover and Yadav, 2004; Reuter et al., 2010).

Camptotheca acuminata nut

Camptotheca (cancer tree) is a medium-sized tree grows in southern China and Tibet. The barks and stems of camptotheca acuminata contain many alkaloids which have antineoplastic activities including camptothecin (Koo and Arain, 1999). The extract of camptotheca and camptothecin have traditionally been used in psoriasis treatment in China and shown to be efficacious. In the animal models of psoriasis, camptothecin was shown to inhibit cell proliferation, promote the cell differentiation and induce apoptosis (Deng et al., 2013). Topical treatment with 0.03% camptotheca acuminata was reported to

be more effective than 1% hydrocortisone in an open trial with 92 patients with psoriasis (Koo and Arain, 1999). Contact dermatitis, skin irritation and enhancement of postinflammatory hyperpigmentation were reported as a side effect (Deng et al., 2013; Koo and Arain, 1999).

Cayenne pepper (*Capsicum Frutescens*)

Cayenne pepper is a plant belonging to the genus *Capsicum*. It is one of the most bitter substance ever known and causes a burning sensation in any tissue that comes into contact. The active component of cayenne pepper is capsaicin (8-methyl-N-vanillyl-6-nonenamide) (Yu, 2011). It is thought that in psoriatic epidermis, capsaicin downregulates the translation of hypoxia-inducible factor-1 α (HIF-1 α) mRNA and by this way it inhibits proliferation and induces differentiation of keratinocytes (Yu, 2011).

In a double-blind, placebo-controlled study in 44 patients with moderate to severe psoriasis, capsaicin cream was compared with vehicle cream (Bernstein et al., 1986). After six weeks of therapy, capsaicin cream was found to be significantly more effective than placebo.

The substance P has an important role in pathogenesis of both psoriasis and pruritus. In 1993, Ellis et al. designed a study to evaluate the effects of topical capsaicin in psoriatic patients with pruritus (Ellis et al., 1993). They compared the 0.025% capsaicin cream four times daily with vehicle cream as placebo in a double-blind, placebo-controlled, randomized study of 197 psoriatic patients with pruritus for 6 weeks. The physician's global evaluation and a combined psoriasis severity score was used to evaluate the patients and capsaicin cream was found to be superior to vehicle significantly.

The most common side effect is the burning and stinging sensation on application site but this side effect is diminished after repeated applications (Ellis et al., 1993; Reuter et al., 2010). It is contraindicated in open wounds and should not be used on the face (Reuter et al., 2010). Although it seems to be promising, more studies are needed to prove long term efficacy and safety of capsaicin in the treatment of psoriasis.

Copaifera

Copaifera is a neotropical pinnate-leaved tree grows in Amazon regions. Copaiba balsam is obtained from cavities within the trunk of several *Copaifera* trees. It was traditionally used in the treatment of several inflammatory diseases in Amazon region (Gelmini et al., 2013). Copaiba balsam is composed of essential oil and resinous fraction. It was proposed that copaiba oleoresin exhibits an anti-inflammatory activity through inhibiting NF- κ B nuclear translocation and proinflammatory cytokines secretion.

Gelmini et al. (2013) treated one patient with severe psoriasis by using ointment containing 5% of *Copaifera* Langsdorffii Desf. oleoresin dissolved in karitè shea butter to the lesions on one site of the body and 0.005% calcipotriol ointment to the lesions on the other site. The ointments were applied twice daily for 6 weeks. At the end of the treatment period significant clinical improvement observed on both site of the body and oleoresin from *Copaifera* Langsdorffii Desf. found to be effective in topical treatment of psoriasis with well tolerability.

Gotu kola (*Centella asiatica*)

Gotu kola (*Centella asiatica*) is a plant that has been used in traditional medicine in India and in China for the treatment of dermatological conditions, such as small wounds, hypertrophic wounds, burns, eczema and scleroderma. The pentacyclic triterpenes, mainly asiaticoside, madecassoside, asiatic and madecassic acids are the active compounds responsible of its therapeutic effects (Bylka et al., 2013).

Traditionally, it has also been used in the treatment of psoriasis. In vitro inhibition of keratinocyte replication by aqueous extracts of *Centella asiatica* was shown in one study and this might be the way of action of this plant in psoriasis (Sampson, 2001).

St John's wort (*Hypericum perforatum* L.)

St John's wort (*Hypericum perforatum* L.) has traditionally been used in the treatment of wounds, burns and dermatitis. A pilot study was conducted to evaluate the clinical effect of topical 5% *Hypericum perforatum* L. extract ointment twice daily for 4 weeks on plaque type psoriasis (Najafizadeh et al., 2012). In this single-blind, half-side comparative study in 10 patients with plaque-type psoriasis, although none of the patients acquired a complete resolution after 4 weeks, significant improvement in clinical scores was reported with *Hypericum perforatum* L. 5% ointment compared with placebo group (all erythema, thickness and scaling scores were found to be significantly lower in treatment group compared to placebo).

Indigo naturalis (*Qing Dai*)

Indigo naturalis (*Qing Dai*) has been used commonly in traditional Chinese medicine for antipyretic, anti-inflammatory, antiviral, antimicrobial purposes and to treat psoriasis and leukemia (Liang et al., 2013). It is a blue powder obtained from the stems and leaves of the plant *Baphicacanthus cusia* and other indigo-containing plants such as *Polygonum tinctorium*, *Isatis indigotica* and *Indigofera tinctoria*. While indigo naturalis had been used systemically before, it was started to be used topically since 2003 to avoid the adverse reactions such as gastrointestinal tract irritation and hepatitis. Induribin and indigo are the major active components of indigo naturalis (Lin et al., 2009).

After observations of beneficial effects of topically applied indigo naturalis on one child (Lin et al., 2006) and two adult (Lin et al., 2007) patients with severe recalcitrant plaque type psoriasis, a pilot study was conducted to evaluate the efficacy and safety of topical Indigo naturalis in psoriasis (Lin et al., 2007). In this non-randomized, half-side comparison study in 14 patients with chronic plaque psoriasis, significant improvement in clinical scores and histological parameters of proliferation, inflammation and differentiation was reported with indigo naturalis 20% ointment compared with placebo group.

One year later, the same research group conducted subsequent randomized, placebo-controlled, observer-blind, inpatient comparative study with larger number of patients and longer time of period compared to previous one (Lin et al., 2008). They reported significant improvement of lesions in indigo-treated group compared to placebo (81% vs 26%).

In a small case series of 6 patients (Lin, 2011) and an uncontrolled pilot study of 32 patients with nail psoriasis (Lin et al., 2011), indigo naturalis oil provided a decrease in the Nail

Psoriasis Severity Index after 24 weeks and was found to improve nail psoriasis.

It was indicated that indirubin inhibits proliferation and abnormal differentiation of epidermal keratinocytes (Lin et al., 2009). Experimental studies also showed that indigo naturalis inhibits neutrophil proinflammatory response and suppress tumor necrosis factor-induced vascular cell adhesion molecule-1 expression in endothelial cells (Liang et al., 2013). One or combination of them might contribute to the anti-psoriatic effects of indigo naturalis (Lin et al., 2009).

Although all of these was reported by same research group, indigo naturalis seems to be promising antipsoriatic agent.

Kukui nut tree (*Aleurites moluccans*) oil

Kukui nut oil prepared from seeds of kukui nut tree (*Aleurites moluccans*) has been used traditionally to treat wounds and burns. After observations of improvement in psoriasis patients using topical kukui nut oil during Hawaii visit, a double-blind, placebo-controlled, 12-week pilot study with 30 patients was conducted to determine the effectiveness of the this oil in psoriasis treatment (Brown et al., 2005). Although improvement was seen in both group of patients, no significant difference was detected between kukui nut oil and placebo group with regard to PASI or Global Severity.

Mahonia aquifolium (*Berberis aquifolium* or Oregon grape)

Mahonia aquifolium (Oregon grape), which belongs to family Berberidaceae is an evergreen shrub with black berries found in Pacific Coast of North America. Berberine, an isoquinoline alkaloids, is the main active compound obtained from the stem barks of Mahonia aquifolium (Amenta et al., 2006). Antiproliferative, antimicrobial, antimutagenic and antioxidant activities of Mahonia aquifolium extracts were shown in some experimental studies (Deng et al., 2013). The role of lipoxygenase and lipid hydroperoxide in the pathogenesis of chronic inflammatory diseases like psoriasis is widely accepted. It was proposed that a decrease in the growth of keratinocyte through inhibition of the lipoxygenase and lipid peroxide by Mahonia aquifolium might be the way of action in psoriasis (Bezáková et al., 1996; Rahman et al., 2012).

The efficacy and safety of 10% mahonia aquifolium bark extract ointment were assessed in a randomized, double-blind, placebo controlled study with 82 psoriatic patients (Wiesnauer and Lüdtke, 1996). Although 61.3% of the patients and 63.8% of physicians assessed the mahonia extract as ineffective, it was found to be more effective than placebo.

In a randomized, double-blind, placebo-controlled study, a topical cream containing 10% mahonia extract compared with placebo in 200 patients with mild to moderate psoriasis (Bernstein et al., 2006). The treatment applied twice daily for 12 weeks. Significant improvement in PASI and Quality of Life Index was observed in patients treated with mahonia extract compared with placebo group.

Burning and stinging sensation on application site was the most commonly seen side effect of mahonia aquifolium extract. In one study bilateral exacerbations was reported in the course of treatment with mahonia (Deng et al., 2013). In conclusion, mahonia aquifolium seems to be well tolerated and effective treatment for patients with mild to moderate psoriasis.

Silybum marianum (Milk thistle)

Silybum marianum (milk thistle), a plant of the Asteraceae family, is found throughout the world. It has been used for the herbal treatment of liver disease for a long time. Silymarin, a medicinal extract of the silybum marianum, is a mixture of flavonolignans consisting of silybin, silydianin, silychristin and other derived from this plant. A cream and a scalp poultice containing silymarin are commercially available in Italy and are used for the treatment of psoriasis. The inhibition of prostaglandin synthetase and lipoxygenase by silymarin is the proposed way of action of this plant in the treatment of psoriasis (Capella and Finzi, 2003).

Turmeric (*Curcuma longa*)

Curcumin (diferuloylmethane) is an active polyphenol of the spice turmeric (*curcuma longa*), which is a member of the ginger family (Zingiberaceae). It is obtained from rhizomes of turmeric and used as a yellow coloring and flavoring agent. In ancient times it was used for the treatment of numerous diseases such as biliary disorders, anorexia, cough, hepatic disorders, rheumatism, sinusitis and skin diseases (such as acne, psoriasis, dermatitis, and diaper rash) in Asian countries (Gupta et al., 2013; Pari et al., 2008). Curcumin is an enigmatic molecule that possess antioxidant, anti-inflammatory, antitumorogenic, antiangiogenic, antipsoriatic properties (Thangapazham et al., 2007). Several studies were conducted to evaluate the efficacy of curcumin in the treatment of numerous human diseases including cancer, inflammatory bowel diseases, peptic ulcer, diabetes, Alzheimer's disease, arthritis, psoriasis and other chronic illnesses (Gupta et al., 2013).

Heng et al. (2000) treated 10 patients with plaque type psoriasis with 1% curcumin gel. Ninety percent resolution was achieved in 5 patients after 2 - 6 weeks, and the remaining 5 patients showed a 50 - 85% resolution after 3-8 weeks. They also compared the efficacy of 1% curcumin gel with vehicle gel on two similar untreated plaques of 6 patients with psoriasis. At the end of 3 - 4 week treatment period, all of the six curcumin-treated plaques showed 25 - 70% resolution, whereas neither improvement nor worsening was seen on vehicle treated plaques.

Curcumin is a selective phosphorylase kinase inhibitor. Phosphorylase kinase enzyme is expressed significantly higher levels at psoriatic epidermis than normal epidermis (Heng et al., 1994). It was suggested that the antipsoriatic effect of curcumin might result from the suppression of activity of this enzyme (Heng et al., 2000). Curcumin also leads to decrease in the expression of IL-6 and IL-8 in human keratinocytes which are proinflammatory and growth factors for keratinocytes (Thangapazham et al., 2007). The transcription factors (e.g., AP-1, and PPAR γ), enzymes (e.g., COX2, 5-LOX, iNOS, and hemeoxygenase-1), cell cycle proteins (e.g, cyclin D1 and p21), cytokines (e.g., TNF, IL-1, IL-6) and cell surface adhesion molecules are other possible targets proposed to be responsible from antipsoriatic activity of curcumin (Rahman et al., 2012). Besides various biological properties, curcumin is quite safe and no toxicity was reported even at higher doses. Because of these properties, it is a promising, potential substance for treatment of various chronic and inflammatuar diseases including psoriasis.

Veratrum californicum

Veratrum californicum (California corn lily, California false hellebore) is a poisonous plant native to high, moist meadows of Western North America (Hovhannisyanyan et al., 2009). Veratrum californicum is the source of cyclopamine which is a steroidal alkaloid that has teratogenic potential on animals by inhibiting hedgehog (Hh) signaling pathway (McFerren, 2006). Recently, cyclopamine is the source of many researches as a theuropathic agent in the treatment of psoriasis and tumors that result from aberrant Hh activity, such as basal cell carcinoma (McFerren, 2006).

In a preliminary proof of concept study, cyclopamine was found to be more effective than topical clobetasol-17 propionate in the treatment of guttate and plaque type psoriasis (Taş and Avci, 2004). Also, inflammatory cells including CD4+ lymphocytes were found to disappear rapidly after the treatment with cyclopamine (Taş and Avci, 2004).

Some authors proposed that the Hh pathway is activated in psoriatic lesions and they hypothesized that the therapeutic effect of cyclopamine in psoriasis might be through the inhibition of Hh signaling (Hovhannisyanyan et al., 2009). But the activation of Hh pathway in psoriasis couldn't be confirmed by other studies (Gudjonsson et al., 2009). Thus, the role of Hh pathway in psoriasis is not clear yet and there may be other mechanisms of cyclopamine therapeutic effect.

White willow (Salix alba)

Salicylic acid is an organic acid obtained from bark of salix alba (white willow), which has been used from the time of Hippocrates (400 BC) for the treatment of pain. Salicin is the active extract of the bark of salix alba. Salicylic acid is an organic acid which is derived from the metabolism of salicin. Preparations containing salicylic acid are important in the standard psoriasis therapies due to its strong keratolytic activity on hiperkeratotic plaques (Reuter et al., 2011).

Traditional Chinese herbal medicine

Traditional Chinese Herbal Medicine (TCHM) is an alternative method of therapy that can be used in the treatment of psoriasis in oral, topical or injectable forms. The mixture of herbs that are combined in different amounts according to needs of each individual patient is preferred rather than standardized formulations in TCHM (Koo and Arain, 2003). Most of the plants used in TCHM are not used as monotherapies so it is not easy to conclude the efficacy and safety of single plant in the treatment of psoriasis. There are lots of uncontrolled studies that investigated the efficacy of TCHM in psoriasis especially in Chinese literature (Tse, 2003). Camptotheca acuminata nut and Indigo naturalis (Qing Dai) are plants that are frequently used in TCHM as a monotherapy.

Oleum horwathiensis, Herbal bath, Queyin, Liubai Baibi, Xiaoxuanling, Compound Qinbai, New Pulian Formulas and Compound E-Bei are the examples of topical formulations composed of different plants that are used for the treatment of psoriasis. In a meta-analysis of clinical studies of topical herbal formulae that used in the management of psoriasis, Sophora flavescens root and Lithospermum erythrorhizon root were reported to be the most commonly used herbs in these formulations (Deng et al., 2013). The anti-inflammatory, anti-proliferative, anti-angiogenic, and tissue repair actions of these plants may be relevant in antipsoriatic effects of these topical

multi-herbal formulations (Deng et al., 2013).

SUMMARY

The herbs are being increasingly used in treatment of skin disease like psoriasis. Patients believe that these products are 'natural' and thus 'safe'. There are some promising herbal treatments in psoriasis according to recent data but because of small size of most studies, evidence provides limited information about efficacy and safety of these products. Besides, there are some other problems related with phytotherapy. First of all, the plant composed of many active ingredients and the concentrations of these ingredients change according to plant growth conditions, time of harvest and method of extraction. So the standardisation of herbal products is very hard (Dattner, 2003). The legal control on these products is insufficient in many countries. Secondly, there is a possibility of interaction between herbal products and conventional medications used by patients. Most of the patients don't mention about herbal therapies they used and sometimes clinicians forget asking herbal therapy usage in history. So, lifethreatening drug interactions can occur. Furthermore, adverse events such as contact or irritant contact dermatitis may occur related with phytotherapy.

In conclusion, there is conflicting evidence about safety and efficacy of herbal therapies and it is too early to recommend any of them to patients with psoriasis. More experimental and controlled clinical studies are needed to confirm the efficacy of these plants in psoriasis treatment and at least until that day, clinicians should be aware of plants used in psoriasis and possible adverse reactions related with them.

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CONFLICT OF INTEREST

No conflict of interest.

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