

The Potential Anti-Psoriatic Effects of Jojoba Extract

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ABSTRACT

Psoriasis is a chronic, inflammatory skin disease affecting 2-3% of the worldwide population. This disease has been recognized to be mediated by immune alterations. Jojoba liquid waxes possess anti-inflammatory properties. Accordingly, they are capable to diminish neutrophil infiltration, as indicated by decreasing myeloperoxidase activity, and also decrease tumor necrosis factor-alpha and nitric oxide production. It is proposed that jojoba extract may be a useful addition to anti-psoriatic weaponry.

Key words: Jojoba; Jojoba Liquid Waxes; Psoriasis

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REVIEW

Psoriasis is a chronic, cutaneous-articular disease affecting 2-3% of the worldwide population^[1,2]. This inflammatory disease is usually involves extensor surfaces and scalp and is now recognized to be

mediated in part by immune alterations^[3,4]. Psoriatic plaques are histologically described by typical patterns of abnormal epidermal hyperplasia and differentiation^[4]. Tumor necrosis factor (TNF)- α is the most pivotal inflammatory cytokine involved in the pathogenesis of psoriasis. Importantly, this biologic marker has been shown to induce anti-apoptotic proteins in psoriatic lesions^[5, 6]. It has been documented that expression of adhesion molecules increased in psoriasis and it allows the leukocytes infiltration into the lesions. Notably, chronic lesions of psoriasis vulgaris contain prominent neutrophil accumulations^[7]. In the other words, the appearance of mononuclear leucocytes in the papillary dermis and neutrophils in the stratum corneum are defining features of psoriasis pathophysiology^[8]. It has been found that increased production of nitric oxide (NO) might play a part in the development of psoriasis^[9]. Interestingly, nitric oxide production is ~10-fold higher in nonlesional skin of psoriatics and ~10-fold higher again in the plaques themselves^[7].

Herbal remedies have been used effectively in skin disorders for thousands of years in Europe and Asia^[10]. Jojoba (*Simmondsia chinensis*) is a drought resistant and long-lived plant. It is a nontraditional crop^[11] native to the semiarid regions of Southern Arizona, Southern California, and Northwestern Mexico^[12] (Figure^[13]). The jojoba plant produces esters of long-chain alcohols and fatty acids^[14]. This is in contrast to the triglycerides found in seeds of other plants^[15]. Jojoba oil, a liquid unsaturated wax composed of esters of long carbon chain fatty acids (C20 to C22) and long carbon chains unsaturated alcohols (C20, C22)^[9]. Jojoba oil is used in cosmetic, pharmaceutical, dietetic food, animal feeding, lubrication, polishing and bio-diesel fields^[16]. Wax esters are neutral lipids which composed mainly of aliphatic alcohols and acids, with both moieties usually long-chain (C (16) and C (18)) or very-long-chain (C(20) and longer) carbon structures^[17]. Jojoba liquid waxes (JLW) have been demonstrated to possess anti-inflammatory properties. Habashi et al. demonstrated the effectiveness of jojoba liquid wax in combating inflammation in several experimental animal models^[18]. Notably, they reported that JLW is capable to diminish neutrophil infiltration, as indicated by decreasing myeloperoxidase (MPO) activity, and also decrease tumor necrosis factor-alpha (TNF- α) and nitric oxide (NO) production^[18].

In short, given the inhibitory properties of jojoba extract on TNF- α ,



Figure 1 Male jojoba flowers^[13].

neutrophil infiltration and NO, it could be reasoned that jojoba extract might be a useful addition to anti-psoriatic weaponry. Importantly, jojoba as a dermal permeation enhancer^[19] might potentiate anti-psoriatic effects of topical steroids. Additionally, as JLW stimulates collagen I synthesis in fibroblasts^[20], its concomitant use with steroids might prevent steroid-induced cutaneous atrophy. Finally, jojoba esters are able to potentiate skin hydration; hence, its topical application could be beneficial in psoriatic patients^[21]. Our commentary encourages the conduction of clinical trials on this subject.

CONFLICT OF INTERESTS

The authors declare that they do not have conflict of interests.

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