

## Black Cumin Oil: A New Treatment for Palmoplantar Psoriasis

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### Summary:

**Background:** Palmoplantar psoriasis is a therapeutically challenging condition that can significantly impact patient quality of life as it directly affects activities. However, despite this impact, few clinical studies address treatment. Herbs and their extracts have been used for treatment of skin disease for centuries. One of the most popular herbs in our society is black cumin or seed of blessing oil (*Nigella Sativa*); this plant had diverse clinically useful activity.

**Patients and Methods:** This study was conducted in the Department of Dermatology and Venereology in Baghdad Teaching Hospital, Iraq during the period between January and October 2003. In this single-blind randomly controlled therapeutic study, thirty patients were enrolled, their ages ranged from 22-65 years. There were 18 females and 12 males. The patients were divided into 2 groups; group A (20 patient) instructed to use nigella sativa 10% ointment twice daily for 3 months, while group B (10 patient) used a control ointment (Vaseline). Statistical analyses were carried out by computer using t-test, and chi-square when needed.

**Results:** twenty-four patients completed the study. In group A (18 patients), we noted a significantly reduction of the thickness and fissuring of the skin of the affected part which was also become very soft after 3 months of therapy. The response of patients to treatment was good in 50%, moderate in 27.8% and mild response in 22.2%. The satisfaction of patients with treatment was full in 61.1%, partial in 27.8%, and no satisfaction in 11.1%. In group B (6 patients), the lesions showed no significant reduction after 3 months and the response of patients to treatment was good in 16.6%, moderate in 33.4%, and mild response in 50%. The satisfaction of patients with treatment in this group was full in 16.6%, partial in 50%, and no satisfaction in 33.4%. The difference in outcome after 12 weeks between the 2 study groups was statistically significant.

**Conclusion:** The ointment of the black cumin is considered as a very good remedy for the palmoplantar psoriasis. This remedy is considered to be very safe, cheap and easy to prepare with no serious side effects as compared to the previous ointments for this type of psoriasis.

**Key words:** Black Cumin, Palmoplantar Psoriasis

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### Introduction:

Psoriasis is a chronic, unpredictable, and incurable disease that, although not life-threatening, can severely impair a patient's quality of life (1). The disease is frequently complicated by pain and itching that can disrupt everyday activities. Psoriasis causes significant functional, psychological, and social problems (1, 2). When psoriasis involves the palms and soles, it is referred to as palmoplantar psoriasis. Palm and sole involvement can be painful and disabling, as the acral skin lesions can interfere with a variety of functions (3,4). The pain and discomfort of palmoplantar psoriasis could result in greater functional and social disability than psoriasis located elsewhere on the body (4). In recent years, the armamentarium of psoriasis therapies has become a vast array of topical and systemic treatments (5). For limited disease, topical corticosteroids, topical vitamin D3 derivatives, topical retinoids, intralesional corticosteroids, and /or the excimer laser are commonly used (5,6). More extensive disease is usually treated with light therapy,

including broadband ultraviolet B, and psoralen photochemotherapy, or systemic therapy such as acitretin, methotrexate, cyclosporine, and/or an immunobiologic drug (etanercept, infliximab, adalimumab, alefacept, or efalizumab) (6,7). For the patient whose psoriasis is treatment-resistant or who experiences intolerable adverse effects to multiple therapies, the alternative therapies must be kept in mind (8, 9).

Black cumin is annular herbaceous plant, widely cultivated throughout South Europe, Egypt, Syria, Saudi Arabia, Turkey, Iran, and Iraq. Black cumin contain both fixed and essential oils, proteins, alkaloids, and saponin. Much of the biological activity of the seeds has been shown to be due to thymoquinone the major component of its oil (10). It has been shown that *Nigella sativa* seed and oil are effective anti-microbial (11), immunomodulatory (12), antioxidant (13), anti-inflammatory (14) and with antitumor activity (15). The diversity of therapeutic activity of black cuminis due to the diversity of the active compounds that it contains.

Remedy extracted from black cumin showed promising results in many dermatological conditions.

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In our country we achieve a successful remedy extracted from black cumin in treatment of impetigo, scabies, pediculosis and dermatophytosis (16). Moreover black cumin oil has been used in treatment of recurrent aphthous ulceration and atopic dermatitis (17). This leads us to consider the possibility of using black cumin oil lotion in the treatment of palmoplantar psoriasis.

The present prospective controlled study is carried to evaluate the effectiveness of black cumin oil on patients with palmoplantar psoriasis as this type of psoriasis is difficult and resistant to the standard drugs of psoriasis.

#### Materials, patients and Methods:

This study was conducted in the Department of Dermatology and Venereology in Baghdad Teaching Hospital, Iraq during the period between January and October 2003. Thirty patients were enrolled, their ages ranged from 22-65 years with a mean age  $41 \pm 7.5$  SD. There were 18 females and 12 males. Significant palmar plantar disease was defined as moderate to severe psoriasis, having at least 50% of a single palmar or plantar surface involved (18). Those not meeting these criteria were excluded. Full history was taken from each patient regarding age, gender, and duration of the disease, previous treatment and ensured that every patient had stopped any systemic and topical treatment at least 2 months before starting the present therapy.

In this method, the black cumin oil was bought from local market (Camel brand, Saudi Arabia). Black cumin oil ointment was prepared by mixing the oil with petrolatum in a ratio of 1:9 to prepare the ointment in 10% concentration which is used in this clinical trial accordingly (16).

Ethical approval was obtained from the health authority of the Baghdad Medical City Teaching Hospital and from the Medical College Council in Baghdad University. Oral consent was taken from each patient before therapy.

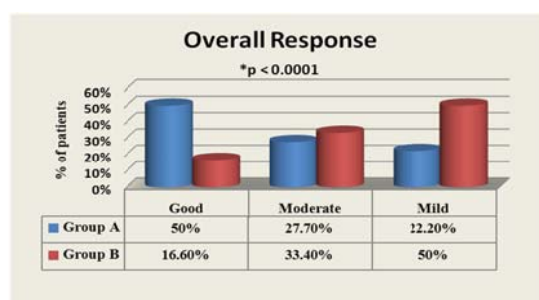
Patients were divided randomly into 2 groups: **Group A:** In this group, 20 patients were treated with 10% black cumin oil ointment. Each patient was instructed on how to use the ointment topically, twice daily for 3 months and clinical evaluation was carried out monthly. The assessment was carried out by watching the thickness and fissuring of the skin of the affected part and also watching for any side effects. **Group B:** In this group, 10 patients were treated in the same manner as described above, but using the control ointment (Vaseline). All these patients were followed for 6 months. The response of patients to treatment was classified as: Good response, in which there is reduction in redness of the skin and it become soft with disappearance of fissuring. Moderate response, in which there is a reduction in redness and thickness of the skin but there is still fissuring. Mild response, in

which there is just slight decrease in redness but the skin, is still thick with fissuring. The satisfactions of the patients to the treatment are classified into: 1. Full satisfaction. 2. Partial satisfaction. 3. No satisfaction. Statistical analysis was carried using SPSS version 16. Both descriptive and analytic data were used.

#### Results:

Thirty patients were included in the study, and 24 (80%) patients completed the course of treatment. In group A there were 18 patients, 12 females (66.6%) and 6 males (33.3%), while in group B, there were 6 patients, 3 females (50%) and 3 males (50%). six patients (20%) did not complete the treatment and were considered defaulters for unknown reasons.

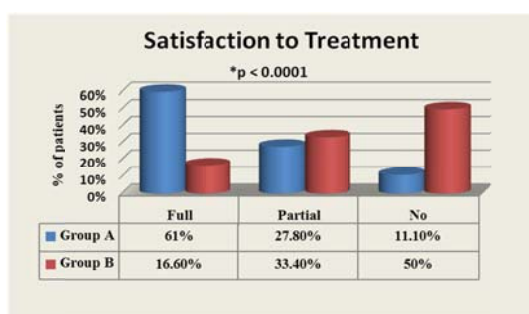
The overall response of the patients to treatment in **group A** at the end of 12 weeks showed 9 patients have good improvement (50%), 5 patients' moderate improvement (27.7%) and mild improvement in four patients (22.2%). Regarding **group B**; one patient only showed good improvement (16.6%), 2 patients had moderate improvement (33.4%) and 3 patients showed mild improvement (50%). The comparison between the two groups shows that there was a significant difference (fig.1).



**Figure 1-Response to treatment in both groups after 3 months. \* ( $P \leq 0.05$ ) significant with chi square**

Assessment of patient satisfaction in group A showed 11 patients (61.1%) fully satisfied, 5 patients (27.8%) partially satisfied, and 2 patients (11.1%) not satisfied. In group B this showed, 3 patients (50%) not satisfied, 2 patients (33.4%) partially satisfied, and 1 patient (16.6%) fully satisfied (fig.2).

For sex, age of patients and duration of the disease, the present work showed no difference in response to therapy.



**Figure 2-Satisfaction to treatment in both groups after 3 months.\* (P ≤ 0.05) significant with chi square test.**

#### Discussion:

The present study shows that after 3 months treatment of patients suffering from palmoplantar psoriasis with black cumin oil ointment, there was statistically significant improvement in patient's disease state (fig 3). The improvement in disease state noted in the control group is more probably related to the emollient action of the oil in petrolatum (Vaseline). The effects of black cumin oil on palmoplantar psoriasis could be attributed to the:-

**A. Anti-inflammatory Effect:** It is well known that palmoplantar psoriasis is a genuine inflammatory disease, and evidence exists indicating that appropriate anti-inflammatory therapy has the potential to effectively treat this condition (1,4).

Black cumin is well known to have anti-inflammatory effect. The anti-inflammatory effect of black cumin was found to be comparable to that produced by aspirin, crude fixed oil of black cumin oil and its pure thymoquinone inhibit COX and 5-LO pathways of arachidonate metabolism in rat peritoneal leukocytes (14). Moreover Another study found that *Nigella sativa* oil produce a concentration dependent inhibition of 5-LO production and 5-hydroxy-eicosa-tetra-enoic acid (5-HETE) production (18). Recently, a study showed that thymoquinone downregulates leukotriene biosynthesis (19). So black cumin oil may lead to improvement of patients with palmoplantar psoriasis through its anti-inflammatory effect.

**B. Immunomodulatory Effect:** There is no doubt that immune system play a role in pathogenesis of psoriasis (1). Drugs that suppress immune system have been used in treatment of resistance cases of psoriasis such as palmoplantar psoriasis (6,8). Black cumin is well-known immunomodulatory and several studies were done to show its efficacy (20). So immunomodulatory effect of black cumin may play a role in its anti-psoriasis action.

The 10% Black cumin oil ointment showed no side effects, and can be considered very safe when compared with other topical therapies that are commonly associated with local and systemic side.

The present study recommends the use of 10% Black cumin oil ointment as a topical therapy for palmoplantar psoriasis, as it is a natural plant extract. In conclusion, 10% black cumin oil ointment is effective, safe, non-costly, and well-tolerated topical treatment for palmoplantar psoriasis.



**Figure 3- Photographs of the plantar psoriasis lesion [A] before treatment, and [B] after 3 months of treatment with black cumin oil ointment.**

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