

Myths and Misconceptions

Ronni Wolf, MD, Section Editor
Kaplan Medical Center, Rehovot, Israel

The Role of Fish Oils in Psoriasis

Julia Rackal, MHSc;¹ Benjamin Barankin, MD²

From the Faculty of Medicine, Queen's University, Kingston, Ontario, Canada;¹ and the Division of Dermatology, University of Alberta, Edmonton, Alberta, Canada²

Address for correspondence:
Benjamin Barankin, MD,
University Dermatology Centre,
2-104 Clinical Sciences Building,
Edmonton, Alberta, Canada
T6G 2G3
E-mail:
benbarankin@yahoo.com

 www.lejacq.com
ID: 2992

A 42-year-old business executive with chronic plaque-type psoriasis affecting 30% of his body presented for a follow-up appointment. The affected surface area is too extensive for daily topical therapy and he is too busy at work for triweekly psoralen and UV-A sessions. Previous treatment with methotrexate was not tolerated well and he is concerned about systemic side effects. He wants to know if there are foods that might help his psoriasis because he is becoming increasingly exhausted with conventional therapy.

Comments

Psoriasis is a common inflammatory skin disorder affecting 2% of the population in Western countries, and having a significant impact on psychological and social well-being.^{1,2} Depending on the type, site, and extent of involvement of psoriasis, there are a variety of treatment options available. Topical therapies include corticosteroids, calcipotriene, tars, anthralin, and retinoids. Widespread, stable plaque-type psoriasis may require systemic therapy (retinoids, methotrexate, cyclosporine). While these therapies may be effective, side effects can preclude long-term use. Newer biologic agents that selectively target the immune cells thought to be involved in the development of chronic plaque psoriasis are currently being developed and tested. The biologic agents are inaccessible to many patients, especially those with milder disease, owing to the high cost of this therapy.

Increasingly, patients are searching for alternatives to pharmacologic agents. This has caused a boom in the use of complementary and alternative medicines. Physicians have been slow to respond to this interest. Over

the past 10 years, the literature has been dominated by humoral and cellular immunologic research, due to heightened interest in biologics. This has overshadowed previous investigations into the role of proinflammatory mediators such as eicosanoids in the etiology of psoriasis.

The first evidence that fatty acids played a role in inflammatory conditions came from epidemiologic observations of the low incidence of inflammatory disorders such as asthma and psoriasis in Eskimos who consume large amounts of omega-3 fatty acids, in particular eicosapentaenoic acid (EPA), from cold-water fish.³ Some of the effects of omega-3 fatty acids are due to the modulation of the amount and types of eicosanoids that are made. Psoriatic lesions are characterized by hyperplasia and incomplete differentiation of the epidermis, dilated capillaries in the papillary dermis, and by leucocyte infiltration in both the epidermis and dermis.⁴ Because eicosanoids affect blood vessels, inflammatory cells, and are involved in regulation of epidermal growth and differentiation, investigation into their role in psoriasis has been warranted. The role of lipid mediators and free fatty acid in psoriasis has been summarized.⁵ The content of free arachidonic acid (AA) in psoriatic lesions is increased 20-fold compared with uninvolved epidermis. Phospholipase A2 or C is required to release free AA from membrane phospholipids. The activity of these enzymes has been shown to be markedly elevated in psoriatic lesions compared with uninvolved psoriatic skin.

Eicosanoids are related, at least in part, to the pathogenesis of psoriasis, but demonstration of their precise role has been difficult. There is evidence that antipsoriatic therapies interfere with eicosanoid metabolism.⁵

Topical glucocorticoids, oral etretinate, and methotrexate have all been shown to reduce eicosanoid activity in psoriasis.⁵ EPA may reduce the proinflammatory mediators derived from the AA cascade.

With data supporting the pathophysiologic rationale, several studies have investigated the effects of a diet rich in fish oils. A review of the studies evaluating the therapeutic benefit of omega-3 fatty acids on plaque-type psoriasis found the conclusions to be inconsistent.⁵ The studies were not comparable because there was variation in the dose of omega-3 fatty acid used, the route of application, the number of subjects and the duration of treatment. Overall, a mild beneficial effect was found. It did appear that improvement did show a dose-response relationship to the overall oral omega-3 lipid uptake. Omega-3 fatty acid may have a role as adjuvant therapy to minimize side effects or work synergistically with systemic agents to produce therapeutic effects. Reductions in retinoid-induced hypertriglyceridemia and cyclosporine-associated nephrotoxicity with oral supplementation of omega-3 lipids have been published.⁵ A study of 18 persons with stable-plaque psoriasis found that low-dose

UV-B treatment in combination with oral fish oil had a significantly greater decrease in the total body surface area of psoriasis compared with patients receiving UV-B and olive oil.⁶ Supplementation of low dose etretinate with EPA was found to reduce the mean time required for a favorable response and lead to significantly more improvement rated as excellent compared with etretinate alone.⁷

A body of literature does exist to support the relationship between psoriasis, the AA cascade and omega-3 fatty acid. Meta-analysis is not possible due to the different dosage, route of application, and duration of treatment. EPA may have minimal to modest usefulness as a monotherapy. As an adjuvant to standard regimens, EPA may have a role in the treatment of psoriasis. Patients may also benefit from the role that omega-3 fatty acids may play in the prevention and treatment of coronary artery disease, hypertension, arthritis, other inflammatory and autoimmune disorders, and cancer.³ It must be noted that fish oil preparations are not standardized and may differ between manufacturers. Because many patients are searching for natural alternatives to pharmacologic psoriasis therapy, the use of EPA as found in fish oils should be mentioned or recommended.

REFERENCES

- 1 Freedberg IM, Katz SI, Wolff K, et al. *Fitzpatrick's Dermatology in General Medicine*. 6th ed. New York, NY: McGraw-Hill; 2003.
- 2 Barankin B, DeKoven J. Psychosocial effect of common skin diseases. *Can Fam Physician*. 2002;48:712-716.
- 3 Simopoulos A. Omega-3 fatty acids in inflammation and autoimmune diseases. *J Am Coll Nutr*. 2002;21:495-505.
- 4 Ikai K. Psoriasis and the arachidonic acid cascade. *J Dermatol Sci*. 1999;21:135-146.
- 5 Grimminger F, Mayser P. Lipid mediators, free fatty acids and psoriasis. *Prostaglandins Leukot Essent Fatty Acids*. 1995;52:1-15.
- 6 Gupta AK, Ellis CN, Tellner DC, et al. Double-blind, placebo-controlled study to evaluate the efficacy of fish-oil and low-dose UVB in the treatment of psoriasis. *Br J Dermatol*. 1989;120:801-807.
- 7 Danno K, Sugie N. Combination therapy with low-dose etretinate and eicosapentaenoic acid for psoriasis vulgaris. *J Dermatol*. 1998;25:703-705.