NUTRITION INFORMATION CENTRE
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PSORIASIS AND NUTRITION

The information explosion in the science of nutrition very often creates the impression that available information is contradictory. Consequently, it is no longer easy to distinguish between fact, misinformation and fiction. The Nutrition Information Centre of the University of Stellenbosch (NICUS) was established to act as a reliable and independent source of nutrition information.

Psoriasis is a T-cell mediated inflammatory dermatological disorder that has baffled doctors for many years. The condition can start at any time of life and can present as a few red spots to covering the skin with raw flaky skin all over the body. It is caused by an abnormality of the skin, which increases both the speed at which skin cells are produced and the time they take to mature and reach the outside layers of the skin. This increased cell production is what causes the characteristic signs of psoriasis (dry, reddish patches covered with silvery scales which develop on any part of the body, but most often on the elbows, knees, nails, lower back and scalp).

The prevalence of psoriasis is relatively high in the general population. Between 0.6% and 4.8%, of the population is reported to be affected. Lifestyle factors such as smoking, alcohol consumption, diet, emotional stress and infections have all been linked to psoriasis in epidemiological studies.

In severe cases, the disease can result in an inadequate nutritional status, which may be further compromised by nutrient-drug interactions. Protein, folate and iron deficiencies have been reported in such cases. Both the general diet and single food components have been suggested to play a role in the aetiology and pathogenesis of psoriasis. Fasting periods, vegetarian diets, and diets rich in omega-3 polyunsaturated fatty acids from fish oils have all been associated with improvement in the symptoms of the disease in some studies.

WHAT CAUSES PSORIASIS?

The cause of psoriasis is unknown, but there is some evidence of disordered arachidonic acid metabolism, which may play a pathogenic role. Studies have found that the skin of people with psoriasis contains high levels of compounds called leucotrienes, which cause inflammation. Leukotrienes are produced from arachidonic acid in the body. Arachidonic acid is found in animal fat.

A genetic predisposition to this disease is also thought to be important. There are a number of other theories regarding the cause of psoriasis, which include an auto-immune disorder, stress, environmental factors, hormones, drugs, infections and sunlight. Due to the lack of scientific evidence, however, these theories are not widely accepted. Nevertheless the disease affects the quality of and at least 10% of psoriatic patients also develop arthritis.

TYPES OF PSORIASIS

- **Plaque (discoid) psoriases:**

Plaque psoriasis is the most common type affecting approximately 90% of psoriasis sufferers. The skin develops clearly defined patches of pink or red skin called plaques, which are covered with dry, crusty, silvery scales, which flake off.

- **Guttate psoriasis:**

This type of psoriasis usually presents in children and adolescents and can be the first sign of a

susceptibility to the condition. In a flare-up numerous small round red spots appear on the body, limbs and scalp.

- **Flexural psoriasis:**

Flexural psoriasis usually occurs in the folds of the body. The patches are inflamed and red, but do not scale. This type of psoriasis tends to occur more often in older people, particularly older women.

- **Nail psoriasis:**

Nail psoriasis is more common in people over 40 and is strongly linked with the development of psoriatic arthritis. Nails become ridged and they may lift away from the finger.

- **Localized pustular psoriasis:**

This type is more common in adults than in children and presents as pus-filled spots on the palms and soles. The affected areas are painful and might resist therapy.

- **Erythrodermic psoriasis:**

This is a rare condition, but could be life threatening, since large areas of the skin become inflamed and scaly and patients could loose their ability to control their body temperature and suffer from nutrient and fluid loss.

- **Psoriatic arthritis:**

Approximately 6% of people with psoriasis suffer from psoriatic arthritis (stiff painful and inflamed joints). The arthritis differs from other other forms of arthritis in the pattern of joints that are affected. With psoriatic arthritis an entire finger or toe becomes swollen and inflamed, rather than an individual joint. Common sites are the hands, feet, spine and neck.

TREATMENT

Psoriasis is generally treated with drugs that are applied locally on the affected areas of the skin or drugs, which have immunosuppressive properties and are given orally or intravenously. The available treatments are known to improve the symptoms of the disease, but do not cure it.

DIETARY CONCERNS ASSOCIATED WITH THE USE OF DRUGS COMMONLY PRESCRIBED IN PSORIASIS

Medications used in the treatment of psoriasis can affect the nutritional status of an individual by interfering with the absorption, metabolism and excretion of nutrients in the food.

Methotrexate

Methotrexate is a well-known cytotoxic therapy for suppressing psoriasis. Methotrexate has been shown to cause deficiencies of Vitamins B12 and folic acid. The decrease in serum folic acid and Vitamin B12 may cause megaloblastic anaemia. Methotrexate may also cause nausea, abdominal pain and mouth ulcers, which, when severe, may require dietary treatment. Patients on Methotrexate treatment may be well advised to take a supplement containing folic acid under medical supervision. Furthermore, elevated homocysteine levels are frequent in patients with chronic immune-mediated disorders including rheumatoid arthritis, systemic lupus erythematosus, chronic plaque psoriasis and psoriatic arthritis, which may be associated with accelerated arteriosclerosis. Folic acid supplementation is especially indicated in patients affected by chronic inflammatory skin diseases, such as moderate to severe psoriasis; in particular, those with hyperhomocysteinemia, low plasma folate and additional cardiovascular risk factors. Folic acid supplements would, however, be ill advised in view of the recently enacted and implemented staple food national food fortification programme in the country.

Ciclosporin, an immunosuppressive drug is also commonly used in the treatment of psoriasis. Patients on such therapy should avoid grapefruit juice. The latter influences the bioavailability of the drug via the enzymatic pathway involved in its metabolism.

Dietary suggestions

- Avoid alcohol consumption

- Eat a diet that includes good sources of folic acid (fresh green leafy vegetables, fruit, organ meats, dried nutritional yeast) and Vitamin B12 (yeast, liver, beef, eggs, kidney).

NUTRITIONAL TREATMENT OF PSORIASIS

Food allergies have not been as strongly linked to psoriasis as they have been to other skin diseases such as eczema. At the moment there is no consensus on any specific dietary treatment protocol for psoriasis. Limited evidence exists for a gluten-free diet or a low protein diet, fasting and supplementation with evening primrose oil, taurine, and zinc sulfate. Some evidence appears to

A patient with psoriasis should follow a well-balanced and healthy diet to prevent nutritional deficiencies. Individuals who suspect food allergies or intolerances should confirm this with a proper diagnosis (RAST and ELISA are two tests that can be used by a practitioner to confirm a food allergy). It is unwise to follow an elimination or exclusion diet without proper diagnosis of a food allergy, since such a diet can affect the overall well being and nutritional status of a positively associated with increased BMI.

Omega-3 Fatty Acids:

Omega-3 is a group of unsaturated fatty acid found primarily in marine oils and algae, and to a lesser extent in plant leaves and some vegetable oils such as canola. Two such important Omega-3 fatty acids are **eicosapentaenoic acid (EPA)** and **docosahexaenoic acid (DHA).** EPA and DHA are abundant in fish such as salmon, mackerel, herring, tuna, snoek, trout, sardines and pilchards.

EPA, DHA together with alpha-linolenic acid have been shown to reduce inflammation by reducing the synthesis of leukotrienes thought to play a role in psoriasis.

Results of studies evaluating the effect of n-3 polyunsaturated fatty acids in the treatment of psoriasis are inconsistent and many of these were criticized due to methodological and design limitations. The results of the randomized controlled trials are less positive than the uncontrolled trials. Only 1 out of 4 studies showed a beneficial effect after oral supplementation with omega3 fatty acids. Dietary supplementation with fish oil rich in EPA [fish oil (10g) and EPA (3g)] taken for 8 weeks, for instance, had a mild to modest improvement in psoriatic symptoms such as the itching, erythema and scaling in psoriasis. The improvement occurred in patients with chronic stable psoriasis and was achieved without any other changes in their diet. Treatment with EPA, therefore, may be important as an adjuvant therapy to more conventional medication such as methotrexate, especially for woman of childbearing age.

Supplementation with other oils such as evening primrose oil is not recommended. No effect on chronic stable plaque psoriasis was observed in a double-blind trial after the supplementation omega 3 fatty acids (marine oil) and evening primrose oil in 37 patients with psoriasis.

NUTRITIONAL RECOMMENDATIONS

- Eat a variety of foods.
- Choose a diet with adequate grain products, vegetables and fruits. Include at least 5 portions of fresh fruit and vegetables per day, especially those rich in Beta-carotene, e.g. carrots, apricots, sweet potato and also those rich in vitamin C e.g. broccoli, orange, cabbage, potato, guava, tomatoes and sweet peppers.
- Choose a diet low in total fat (less than 30% of total energy intake) and saturated fat. Limit the intake of animal fat by eating lean meat and low fat dairy products.
- Gluten free diets could be beneficial for patients with a confirmed allergy or sensitivity to gluten.
- Alcohol is known to cause flare-ups of psoriasis. It stimulates the release of histamine which aggravates skin lesions. Patients should avoid alcohol or use it in moderation or per occasion.

- Eat oily fish regularly to increase the intake of omega 3 fatty acids in the diet. Substitute red meat with salmon, mackerel, snoek, trout, sardines, pilchards and shellfish at least three times per week (see Table).

SOURCES OF OMEGA-3 FATTY ACIDS

Food Source: (150g raw weight)	Total fat (g)	Total Omega-3 (g) (including DHA and EPA)
Sardines in Sardine oil	23.25	4.95
High Fat, grilled: e.g. Herring/Butterfish	17.40	3.33
Salmon	19.50	2.79
Mackerel	20.85	2.50
Pilchards in brine	8.10	2.42
Herring	13.50	2.40
Anchovy	7.20	2.10
Smoorsnoek (medium fat fish, potato and onion	7.05	1.04
Tuna in brine	3.75	0.75
Trout	4.05	0.60
Catfish	6.45	0.45
Haddock	1.05	0.30
Lobster	1.35	0.30
Shrimp	1.65	0.45

SUPPLEMENTS

- Omega-3 fatty acid supplements can increase the dietary intake of these nutrients.
- If a supplement is taken, do not exceed the supplier's recommended daily dose (see product's package insert) and take the supplement in consultation with your doctor.
- Be aware of omega-3 fatty acid supplements that also contain large dosages (more than 150% of the RDA) of vitamins A, D and E, especially if the omega-3 fatty acid supplement is taken in combination with other vitamin and mineral supplements that also contain these vitamins.
- **Any decision to take supplements in large doses should be based on the advice of the doctor or dietitian.**

For further, personalized and more detailed information, please contact NICUS or a dietitian registered with the Health Professions Council of South Africa (HPCSA).
References from the scientific literature used to compile this document are available on request.

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