



Alternative nutritional remedies for people living with HIV/AIDS

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.

INTRODUCTION

People living with HIV/AIDS (PLWHA) often choose complementary and alternative medicine (CAM) to complement or replace conventional treatment. CAM is often defined as “those practices used for the prevention and treatment of a disease that are not taught widely in medical schools, and that are not generally available in hospitals”. To bring some structure to the wide and fast changing field of alternative therapies, the Office of Alternative Medicine (US) has grouped these therapies into seven categories, of which diet/nutrition/lifestyle changes, and herbal medicines form 2 of these categories. Available evidence indicates that patients who are interested in exploring alternative therapies do so for various documented reasons: 1) health promotion and disease prevention purposes; 2) conventional therapies are thought to have been exhausted; 3) conventional therapies are of indeterminate effectiveness or are commonly associated with side effects or significant risk; 4) no conventional therapy is known to relieve the patient’s condition; and 5) the conventional approach is perceived to be emotionally or spiritually without benefit. All of these reasons are thought to be applicable to the HIV/AIDS population.

Against this background, it is important to note that whilst these therapies are used widely, often without supervision, alternative remedies may be potentially beneficial or detrimental to a person’s health. The National AIDS Health Fraud Task Force defines AIDS fraud as “the sale, advertising, or promotion (usually for profit) of products, therapies or services to diagnose, prevent, cure or treat HIV/AIDS, which are unproven, unscientific or harmful” (California AIDS Fraud Task Force, 1996).

The relationship between immunity and nutrition has been well established and underscores the important role of nutrition in HIV/AIDS. The nutritional status of an individual has consistently been shown to play an important role in decelerating the progression of HIV to AIDS, improving quality of life, and decreasing the prevalence and severity of the infectious complications. The need for low cost interventions, therefore, to reduce the morbidity and mortality related to HIV infection, in developing countries in particular, is an urgent one. There appears to be a disturbingly increasing tendency which encourages people to use certain foods (singly or in combination), herbal medicines, oral nutritional supplements and micronutrient supplements to treat HIV related symptoms based on the assumption that such an approach will boost immunity. In general terms, it is also unfortunate that an “unassuming” public appears to accept these claims, presumably out of desperation or not knowing that the safety and efficacy of many of these practices / products remain largely unknown. Furthermore, the lack of an appropriate/adequate evaluation system for such claims not only perpetuates such practices, but, additionally, exposes the wider public to cost-ineffective practices, apart from potential harm and documented orthodox treatment failures. Advising people who seek alternative treatments, therefore, presents a distinct professional challenge.

ALTERNATIVE DIETARY THERAPIES / SUPPLEMENTS

The plethora of diets advocated for HIV-related or other disease symptoms, such as the anti-Candida diet, the macrobiotic diet, amino acid supplements and herbal mixtures have also **not** been subjected to adequate formal clinical research. Suffice it to say, that many of these “diets” usually employ, or result, in the elimination and or restriction of certain foods, an ill-advised and often expensive practice, which is not conducive to affordable good nutrition. Furthermore, emerging evidence indicates that some herbs that have been considered safe, on the basis of the “they have been used for ages without any harm” approach, are actually now contraindicated when used with antiretroviral medications. St. John’s Wort (*Hypericum perforatum*) for instance decreases the effectiveness of a variety of drugs metabolized via the cytochrome P450 enzyme system, not to mention its documented predisposition to haemorrhage in surgical patients. In this regard, St. John’s Wort has been reported to substantially decrease the plasma concentrations of the protease inhibitor Indinavir, which could lead to treatment failure and drug resistance. The FDA and other investigators have cautioned that other protease inhibitors, nonnucleotide reverse transcriptase inhibitors and other drugs, which are metabolised by the same cytochrome P450 enzyme system, may be similarly and adversely affected.

Other popular herbs that are frequently used by PLWHA include Ginkgo biloba and Ginseng. Ginkgo biloba leaves contain flavonoids, sesquiterpenes and diterpenes (ginkgolides) that have been identified as possible active ingredients. Media and marketing claims for this herb include memory enhancement, improvement of concentration and circulation as well as possessing strong antioxidant properties (in vitro). To date there are no controlled studies testing the safety of ginkgo supplements in humans for longer than a year. Mild gastrointestinal upset, headache and allergic skin rash have been reported as side-effects by some individuals. Because the ginkgolides act as inhibitors of platelet-activating factor, supplementation could affect bleeding time. This herb may therefore increase bleeding when taken with other blood thinning drugs or supplements (including warfarin, garlic, ginger, vitamin E, flaxseed and aspirin). Surgical patients should discontinue use of ginkgo at least 36 hours prior to surgery due to the potential increased risk of bleeding.

Ginseng is a collective term used to describe several species of plants belonging to the genus *Panax*. The bioactive compounds in the *Panax* plant are believed to be the saponins found in the roots. This herb is marketed as an energy and mood booster, heart tonic, adaptogen, to improve exercise performance and to control blood sugar in diabetes. Some drug-nutrient interactions have been demonstrated with this herb, including interference with phenelzine (antidepressant), corticosteroids, diabetes medications and oestrogen therapy. Similar to Ginkgo biloba, Ginseng may increase bleeding when taken with other blood thinning drugs or supplements, and as such some investigators have suggested that Ginseng use should be discontinued at least 7 days prior to surgery. Some other reported side-effects include nervousness, sleeplessness, headache and diarrhoea.

Various other dietary supplements have been advocated for use in individuals with HIV/AIDS [including Arginine, Carnitine, Coenzyme Q₁₀, Colostrum, DHEA (Dehydroepiandrosterone), Lipoic acid, N-acetylcysteine, Whey protein]. It is beyond the scope of this article to discuss each of these supplements in detail, but, in general, few, if any, have been adequately evaluated for safety and efficacy, especially in the long-term. Equally of concern is that the evidence, when available, is conflicting and/or the quality of the research performed has been invariably regarded as inadequate. Nevertheless and although a small number of preliminary studies have shown some promising results for some of these supplements, such results are usually inadequate for the purpose of making any final recommendations at this stage. Health care professionals and the public alike, therefore, should at all times be aware of the safety profiles of such supplements.

PROMOTING THE CONSUMPTION OF SINGLE FOODS

Garlic

Garlic (*Allium sativum*) has been cultivated for medicinal and culinary purposes for the past 5 000 years. Recent interest centres on its sulfur-containing compounds [S-allyl cysteine (SAC), S-allyl mercaptocysteine (SAMC), Allicin, alliin and diallyl polysulfides], which are considered to be the primary active ingredients in garlic. Many studies have focused on the effect of garlic on the management of hyperlipidaemia, hypertension, platelet aggregation, and cancer as well as bacterial and fungal infections, which, together with its “antiviral” properties, form the basis of the media and marketing claims.

The possible link with HIV:

Garlic has been used worldwide for centuries as both a topical and oral antibacterial, antifungal and antiviral agent. The popularity of garlic supplements may also be related to claims that garlic reduces serum cholesterol, against the background of the antiretroviral therapy induced hypercholesterolemia.

Garlic’s “antiviral” activity

In vitro and/or animal studies have reported that garlic has several immune enhancing effects. In vitro studies have documented a virucidal activity of garlic extract against herpes simplex types 1 and 2, parainfluenza virus type 3, vaccinia virus, vesicular stomatitis virus and human rhinovirus type 2. Additionally, garlic extract in vitro has been reported to inhibit the growth of *Candida Albicans*.

These in vitro studies, promising as they may appear to be, cannot by any means imply in vivo activity, and, in this regard, there are no human studies to date, which have consistently or conclusively documented that garlic can improve immunity or the immune response.

Other potential effects of garlic

Regarding the claimed hypocholesterolemic effect of garlic, two meta-analyses suggested that garlic was superior to placebo in reducing total cholesterol levels. However, in clinical terms, the use of garlic in the management of hypercholesterolemia is debatable because of the marginal nature of the beneficial effect. Dried garlic powders also significantly reduced triglycerides levels compared to placebo. Despite these positive associations, the authors acknowledge that many of the trials used in the meta-analyses had methodological limitations, which cast doubt on the clinical significance of such findings.

Safety

Experimental data have reported that dried raw garlic powder and dried boiled garlic powder caused significant damage/reddening of the gut mucosa, whereas aged garlic extract had no such deleterious effects.

Garlic supplements in most human studies have been reported to have been **relatively** well-tolerated with the only reported side effects being mild gastrointestinal discomfort at high doses as well as the presence of an undesirable body odour even when using supplements of the “odour-free” varieties. More importantly, an increase in bleeding time has been reported in healthy individuals supplemented with 10g of raw garlic (3 cloves) daily for two months. Because of the latter findings, it is currently recommended that individuals on drug anti-platelet therapy and patients who have to undergo surgery should discuss the use of garlic supplements with their doctors and discontinue any such supplements and/or limit the dietary use of garlic at least seven days prior to surgery.

Of equal importance and in relation to HIV/AIDS, garlic extract supplements have been documented to induce drug-nutrient interactions. In this regard, recent evidence indicates that garlic supplements sharply reduced blood levels of the anti-HIV drug Saquinavir. Although more research is needed in

this area, it is currently recommended that any patients using Saquinavir as the sole protease inhibitor should avoid using garlic supplements.

The African Potato

Hypoxoside is thought to be the major, non-toxic compound in extracts of the African Potato (*Hypoxis* species), which has led to the claimed anticarcinogenic properties of this plant. Hypoxoside itself has been shown to be devoid of any anti-cancer activity. However, upon hydrolysis, hypoxoside is converted to rooperol, which has been shown to be cytotoxic (hence the anti-cancer claim) and to possess potent antioxidant properties. It should, however, be borne in mind that, although present in large amounts in the plant extract, neither hypoxoside nor rooperol could be detected in the blood of human volunteers with lung cancer, who received *Hypoxis* plant extract supplements in large doses (1 200 – 3200 mg of standardised plant extract). As such and at best, the role of these compounds, therefore, in the prevention or treatment of cancer, or for that matter any other disease, is almost totally unknown. Nevertheless, the safety of the plant extract has been questioned and remains a cause of serious concern.

A study on the safety and efficacy of the *Hypoxis* plant extract in HIV positive patients was terminated prematurely, and reported to the Medicines Control Council, because most of the HIV positive patients who received the plant extract showed severe bone marrow suppression after 8 weeks of receiving the plant extract supplement. Indeed, the total lymphocyte count as well as the absolute CD4 cell numbers decreased significantly in these patients after an initial transient increase. Of far greater concern though is that the suspicion of *Hypoxis*-induced immune suppression has been experimentally confirmed in the Feline Immunodeficiency Virus model. Cats, which were treated with *Hypoxis* plant extract supplements progressed, and succumbed, to full blown Feline AIDS faster than their non-treated *Hypoxis* plant extract controls. At best, therefore, HIV/AIDS patients should avoid any such supplements, until such time that their safety and efficacy, or otherwise, has been fully documented.

Virgin Olive Oil

Body shape changes and a number of metabolic abnormalities have been reported in patients with HIV/AIDS. The most frequently reported changes in body shape include an increase in waist size and thinning of the extremities as well as an increase in the fat pad at the back of the neck (buffalo hump) and the axillary fat pads. Women may experience a significant enlargement of the breasts and a marked decrease in the size of the thighs. Although this so called lipodystrophy syndrome is thought to be due to specific drugs used in the treatment of these patients, the exact mechanism remains unknown. Among the metabolic abnormalities, the most notable ones from the nutritional point of view include elevated blood levels of triglycerides and cholesterol as well as resistance to insulin resulting in diabetes mellitus.

It is generally accepted that replacing saturated fat with monounsaturated fat lowers serum cholesterol, LDL-cholesterol and triglyceride levels to about the same extent as polyunsaturated fatty acids in healthy individuals. It has been proposed that high consumption of extra-virgin olive oils, which are particularly rich in phenolic antioxidants (as well as squalene and oleic acid), could afford considerable protection against certain cancers, coronary heart disease and aging by inhibiting oxidative stress. It is the unique profile of the phenolic fraction, along with high intakes of squalene and the monounsaturated fatty acid, oleic acid, which are believed to confer the extra-virgin oil's health-promoting properties.

Thus although the substitution of saturated fat or polyunsaturated fat with extra-virgin olive oil may have health benefits for people with HIV/AIDS, there is no convincing or consistent scientific evidence that virgin olive oil boosts immunity or alters the course of HIV/AIDS, adversely or beneficially. In

theory, it might be beneficial to treat those patients with the lipodystrophy syndrome, but again intervention controlled studies in humans testing the effectiveness of extra-virgin olive oil in the management of this syndrome are not available and specific recommendations cannot be made. Irrespective, such patients are often financially insecure and as such the purchase of a relatively expensive product, such as virgin olive oil, may limit the purchase of other affordable wholesome foods, which in turn is likely to adversely affect their nutritional status.

Onions

Onions is a food source of phytochemicals such as, flavonoids and organosulphur compounds. Onions and garlic both contain diallyl sulphide and other organosulphur compounds. The anti-oxidant properties of these phytochemicals are well documented. However, there are no scientific studies in humans to show that the ingestion of onions will enhance immunity or treat HIV related symptoms efficaciously.

Onions is also a food source of fructooligosaccharides (FOSs). As prebiotics, FOSs selectively stimulate the growth and activity of beneficial colonic bacteria (*Bifidobacterium*, *Lactobacillus*) and have been investigated for their potential role in intestinal health. FOSs have been documented to have stool-bulking properties which may help prevent constipation, but further controlled clinical trials are needed in humans to test the role of FOSs on intestinal health and disease.

In terms of safety, the ingestion of large quantities of onions is known to cause gastrointestinal discomfort and distension and should be used with caution by individuals with chronic diarrhoea and gastrointestinal discomfort.

Beetroot

Despite extensive studies, little is known about the exact vitamin and trace element requirements in HIV/AIDS. A number of studies have reported low blood levels of various micronutrients in this patient population. In this regard, iron deficiency anaemia can be present in the malnourished patient with HIV/AIDS. The main treatment of diagnosed iron deficiency anaemia still remains the oral administration of inorganic iron in the ferrous form. The dietary treatment of anaemia includes several dietary changes such as the inclusion of good dietary sources of iron and vitamin C and the restriction of tannins found in tea. The dietary treatment of iron deficiency anaemia, is not, therefore, as simple as the recommendation of the consumption of a single food.

Beetroot, which has received some attention in the media as treatment modality for anaemia and PLWHA, is not a good dietary source of iron in comparison to other foods which are considered to be excellent sources of iron in the diet (e.g. chicken livers, soya beans, dried apricots, spinach, sardines, beef, lentils and eggs). It is also important to emphasize that the absorption of haeme-iron found in animal sources is better than the non-haeme iron found in plant sources. Although beetroot can and should be included in a varied diet, it is not effective, on its own, in the treatment of iron deficiency anaemia or HIV/AIDS.

It must be noted however, that iron should be supplemented with caution in the malnourished patient. Iron should not be given during the initial phase of treatment as it may have adverse effects and may reduce resistance to infections. There is also preliminary research suggesting that iron supplementation might increase HIV replication. PLWHA should consult a doctor before supplementing with iron.

In summary, there is no convincing or consistent scientific evidence that any one of these foods, singly or in combination, alter the course of disease, any disease. The necessary long-term intervention studies on which such claims can be based are not available. Until such time that the data

is available, to make such claims, it is best to be careful and avoid raising false hopes in people. Of course, if people do think these foods are of any help or eating these foods makes them feel better, and they like them, then there is nothing wrong with consuming them, unless safety concerns have not been resolved, as is the case with the African Potato.

NUTRITION INTERVENTION STRATEGIES & ORAL NUTRITIONAL SUPPLEMENTS

Various strategies have been implemented to try and improve nutritional status, immunity and other clinical outcomes in PLWHA. These strategies include nutritional counselling and oral nutritional supplements (including the so-called “immune-enhancing” supplements). Relatively few studies have evaluated the effects of nutritional supplements on the nutritional and immune status in PLWHA. A small number of studies have documented improved clinical outcomes, but many are inconsistent in nature without any long term benefit to the patient. A paucity of data thus exists regarding the effectiveness of such supplements in terms of nutritional status and immunity. Oral liquid nutritional supplements can provide extra energy at times when optimal food intake may be inadequate/compromised. Energy- and micronutrient-providing nutritional supplements can make a significant contribution to the care of PLWHA by preventing/decelerating weight loss. It has not yet been conclusively demonstrated that nutritional supplementation improves immunity or long term outcomes in HIV/AIDS. It has also to be noted that many of these studies have been criticized for various methodological limitations. Nevertheless, in most studies, nutritional interventions were well tolerated and were reported to be safe for the, mostly, short duration of such studies. Importantly though, a concomitant reduction in total food intake was reported in many of these studies.

Nutritional supplements containing individual immune-enhancing components, such as L-glutamine and arginine, have shown to promote weight gain and improve immunity in PLWHA, whilst others have failed to show an improvement in immunity outcomes. Many of these studies have also been criticized for various methodological limitations (including very small sample sizes, amongst other study design limitations). Some studies have shown that when immunomodulating components are provided as part of an energy-supplying nutritional supplement, there is no additional benefit in terms of weight gain or immunity in HIV/AIDS. Thus, although some studies have shown promising results, evidence for the inclusion of immunomodulating components in nutritional supplements in this patient population is neither consistent nor conclusive. Further research regarding immunonutrition within the context of HIV/AIDS is imperative, before any recommendations can be made with any certainty.

CONCLUDING REMARKS

Of the many and profound changes now being introduced in health care, alternative and complementary therapies / medicine must be regarded as a major factor. This increasingly popular and accepted field has an impact on every facet of the health care system and the food industry. Health care professionals and patients alike should not assume that dietary supplements, beneficial as they are known to be in defined clinical settings, are benign therapies devoid of potential harm. Some of these products may have potent pharmacological actions and may alter the blood levels of concomitant medications. Anyone who chooses to use such dietary supplements should at all times assess their composition as well as their safety and efficacy profiles thoroughly before they use them (Box 1). Consumers and health care professionals alike should be able to recognise the typical phrases and marketing techniques used for promotional purposes (Box 2).

Nutrition is a science which can, and is, safely practiced by the relatively few registered professionals in the country, but is, unfortunately, also exploited by many. There rests an enormous responsibility on health care professionals, the press, the Food and the Supplements Industry as well as the government to always act with integrity, base claims/recommendations on sound scientific evidence, and, ultimately, refrain from raising unsubstantiated hopes and from doing any harm, especially within the context of the HIV/AIDS pandemic.

Box 1: Questions that need to be considered when assessing therapies include:

- Is the product or treatment harmful?
- Are there harmful drug-nutrient interactions?
- Are unproven therapies being used while effective conventional treatment(s) are being delayed / discontinued?
- How effective is it (based on scientific evidence)?
- Is the financial expense worth the benefit?

Box 2: How to spot false claims:

- The product is advertised as a quick and effective cure-all for a wide range of ailments.
- The promoters use key words, such as *scientific breakthrough*, *miraculous cure*, *exclusive product*, *secret ingredient* or *ancient remedy*.
- The promoter claims the medical profession or research scientists have conspired to suppress the product.
- The advertisement includes undocumented case histories claiming amazing results.
- The product is advertised as available from only one source, and payment in advance is required.

For further, personalized and more detailed information, please contact NICUS or a dietician registered with the Health Professions Council of South Africa HPCSA.

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