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THE MACROBIOTIC DIET MAY HAVE BENEFITS IN CANCER PREVENTION

by

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ABSTRACT:

Macrobiotics is one of the most popular alternative or complementary approaches to fighting cancer. The diet is primarily plant-based, is centered on the idea of an all encompassing "yin-yang" concept in life, mind, environment and food. The dietary components of the macrobiotic diet, along with the many lifestyle implications are shown to have beneficial effects in cancer prevention and therapy. The diet has many anti-carcinogenic compounds, as well as a decrease in foods thought to promote cancer. A cause for concern is the vitamin deficiencies that may ensue in following a strict macrobiotic diet, which typically results from an all grain diet. Studies have been shown to look promising in cancer prevention, but more research needs to be done.

What is a Macrobiotic Diet?

Macrobiotics has been described as more than just a diet, but a philosophy. The word itself translates from "macro" meaning large or long and "bio" meaning life, referring to the big view of life (1). It is all encompassing of spiritual, emotional, and physical balance. The macrobiotic diet is not so much based on Western nutritional principles as on elements of ancient Asian Philosophy. George Ohsawa, a Japanese philosopher who combines both Asian medicine and belief with Christian teachings and some aspects of Western medicine, developed the diet. It began in the 1930's when Ohsawa taught a philosophy of healing through proper diet and natural medicine. He moved to Boston in 1960 where an early disciple, Michio Kushi, came to promote and spearhead the macrobiotic way of life (2). There is even now a Kushi Institute located in Becket, Massachusetts, which is the leading macrobiotic educational center in the world.

"The diet is an attempt to balance the 'complementary opposites' know as 'yin' and 'yang'- forces that the Chinese believed must be kept in harmony to achieve good health" (3). "These forces are woven into every aspect of life and are believed to describe all components of life and the universe" (2).

These qualities are also reflected in food, and the macrobiotic regimen strives to bring them into balance. Certain foods are said to be very "yin", others very "yang", and some in-between. The most balanced food in the "yin/yang" continuum is brown rice and whole grains. Hence these foods constitute the foundation of the macrobiotic diet (3).

Table 1. Characteristics of both "Yin" and "Yang" and its food classifications are as follows:

Classification	Characteristics	Foods
Yin	Dark, passive, feminine, cold, negative, expansive, wet, and sweet	Fruit, leafy green vegetables, nuts, seed, tofu and tempeh, fruit and vegetable juices, and barley malt
Yang	Light, active, male, warm, positive, contractile, dry, and salty.	Whole-grain cereals, root vegetables, fish, shellfish, cottage chesse, beans, lentils, salt, and miso

Reference 4

In addition to the foundation, the macrobiotic diet adds foods reflecting different degrees of "yin" and "yang", which are selected in accordance to the individual's dietary needs and temperament. This diet usually reflects a standard macrobiotic diet:

Whole Cereal Grains making up 40-60% of the diet by weight. It is recommended that the grains be organically grown. Grains include Brown rice, barley, millet, oats, corn, rye, wheat, and buckwheat.

Vegetables consist of approximately 20 - 30% by weight to the diet. Local and organically grown vegetables are recommended, with the majority being cooked in various styles such as lightly steamed, boiled, or sautéed. Vegetables not recommended for regular use include: potatoes, tomatoes, eggplant, peppers, spinach, beets, and zucchini. It is important when eating for optimal health to base one's diet on foods from one's own climate, or one that is similar. If one lives in the temperate zones, eating imported vegetables results in imbalance (5).

Beans and Sea Vegetables should constitute 5-10% by weight of the diet. The most suitable beans for regular use are azuki beans, chickpeas, and lentils. Other beans may be used on occasion. Bean products such as tofu, tempeh, and natto can also be used. Sea vegetables such as nori, wakame, kombu, hiziki, arame, dulse, and agar-agar are also an important part of the macrobiotic diet (5).

Occasional foods include a serving of seeds, nuts, fruits, or fish. These are to be eaten no more than three times a week.

Foods to be eliminated include meat, eggs, poultry, dairy products (including butter, yogurt, ice cream, milk and cheese), all of which are considered to be too "yang" (2, 5). Also to be avoided because they are thought to be extremely "yin" is alcohol, coffee, strong spices, refined sugars, chocolate, molasses, honey, and other simple sugars (2, 5).

There are also many Macrobiotic lifestyle suggestions. Just to name a few they include: eat only when hungry, proper chewing (around 50 times or more per mouthful) is important for good digestion and assimilation of nutrients, eat in an orderly and relaxed manner. When one eats, sit with a good posture and take a moment to express gratitude for the food. Exercise regularly, activities may include walking, yoga, martial arts, dance, etc. Avoid using electric cooking devices (ovens and ranges) or microwave ovens. The use of a gas or wood stove is preferred (5).

The general principle behind the macrobiotic diet is that foods biologically far away from humans are better for humans; so foods such as grains and vegetables, rather than red meat, should form the basis of the diet (7).

Therapy for Cancer

Despite the broad view of macrobiotics, in recent years, macrobiotics has come to be known largely as a dietary approach to cancer. This is in part due to the Office of Technology Assessment's publication, *Unconventional Cancer Treatments*, in which macrobiotic diets are listed as a common dietary approach to the treatment of cancer (8). Indeed, "macrobiotics is one of the most popular alternative or complementary comprehensive lifestyle approaches to cancer"(8). The standard macrobiotic diet is similar to a strict vegetarian diet, largely plant based. Research has shown that both plant-only and plant-based eating patterns have health benefits, with a large contribution in reducing risk of chronic, degenerative diseases, including many types of cancer (7). Other health implications of following a plant-based diet include advantages of low levels of saturated fat, cholesterol, and animal protein and higher levels of carbohydrates, fiber, and magnesium, boron, folate, antioxidants, and phytochemicals. Not only that, but those following vegetarian diets have been found to have lower body mass indices, lower rates of heart disease, lower blood cholesterol levels, lower blood pressure, and lower rate of hypertension, type 2 diabetes, and prostate and colon cancer (9).

Components of the macrobiotic diet that are noted for its cancer prevention include the use of soy products, which contain genistein, a potential cancer preventative agent. Those on plant-based diets consume an abundance of antioxidants, which are under investigation for preventative effects as well as therapeutic effects of cancer (6). Many of the lifestyle changes for macrobiotics are consistent with overall disease preventative recommendations also, such as the inclusion of an emphasis on physical activity, avoidance of exposures to pesticides and other chemicals as well as to electromagnetic radiation, and stress reduction (10). Although the association of dietary exposure to such chemicals and cancer risk is controversial, some reports have suggested that exposure to such compounds should be minimized (8).

Other potential anticarcinogenic properties of the macrobiotic diet include the emphasis of whole grains in the diet. There is growing evidence that whole grain consumption decreases the risk of cancers at various sites (11). The effects of whole grains on cancer prevention are probably not limited to dietary fiber effects but may also involve effects on estrogen metabolism, glucose and insulin metabolism, and oxidative processes (8). Sea vegetables, which are promoted in macrobiotics, may decrease breast cancer and endometrial cancer through association of antitumor activities of fucoidan, a sulfated polysaccharide found almost exclusively in brown seaweed, and fucoxanthin, the carotenoid responsible for the brown color of brown seaweed (14).

The role of beans and bean products, particularly soy foods, in cancer prevention continues to be of great interest. Some evidence show that soy intake

has been associated with decreased risk of hormone-dependent cancers such as those of the breast, endometrium, and prostate, and may also decrease risk of other cancers such as those of the stomach, although this may be limited to non-fermented soy foods (8). Soy food and other legumes may decrease cancer risks because of the presences of compounds that may have anticancer effects, including protease inhibitors and saponins (15).

In contrast to cancer preventative foods, the standard macrobiotic diet minimizes foods that are linked to increased cancer risk. With the exception of fish, animal food intake is minimized in macrobiotics. Growing evidence indicates that red meat intake increases the risk of cancer of the colon and rectum, as well as cancers of the prostate and pancreas (8). Eggs may be associated with increase risk of colorectal and ovarian cancer, while dairy food intake is associated with increased risk of prostate, kidney, and ovarian cancers (8).

Health concerns of the diet include protein, iron, zinc, vitamin B12, and calcium deficiencies, and a potential for dehydration (6). Other warnings against the use of a macrobiotic diet for cancer treatment include cachexia, and weight loss (6).

If a macrobiotic diet is chosen after cancer diagnosis, a macrobiotic practitioner first classifies the patient's cancer as primarily "yin" or "yang" or a combination "yin/yang". Then, a very restrictive diet is recommended to correct the suggested imbalances (11). The standard macrobiotic diet provides a framework that is modified depending on one's age, sex, and level of activity, personal needs, and environment. It is tailored to meet the needs of the

individual. "To proponents, cancer is seen as a result of an unbalanced condition, by which the body attempts to localize toxins and thereby produce balance. Therefore, after 'macrobiotic diagnosis,' specific dietary recommendations are made and implemented. The implication is that appropriate dietary treatment will resolve the cancerous state (4)."

Studies of macrobiotics and cancer prevention

Very few studies have looked at the macrobiotic diet in the context of cancer prevention. Studies done by Goldin et al. (8) have shown that women eating a macrobiotic diet had a substantially higher fecal excretion and lower urinary excretion of estrogens, with somewhat lower serum levels of estradiol. It has been suggested by Goldin et al. (8) that these differences indicated a lower risk for breast cancer for women eating macrobiotically. If confirmed that following a macrobiotic diet results in lower blood estradiol levels, this would strengthen the inference that macrobiotics diets may decrease risk of hormone-dependent cancers (8).

Another later study done by Adlecreutz et al. (8) demonstrated that women consuming a macrobiotic diet had dramatically higher urinary excretion levels of lignans than did women consuming a lacto-ovo-vegetarian diet or an omnivorous diet (women with breast cancer had the lowest levels of urinary excretions of these phytoestrogens). Although the evidence that phytoestrogens are important in breast or other cancers is still controversial, this study did report that an inverse association of urinary excretion of phytoestrogens with risk of breast cancer (16).

The significantly higher phytoestrogen excretion levels among women consuming a macrobiotic diet are likely a result of the foods eaten by these women, including the concentrated sources of lignans of whole grains and seeds (8). Other components of the diet are inclusion of soy foods and isoflavones.

Overall, both studies indicated that a macrobiotic dietary pattern might lower risk of breast and other hormone dependent cancers such as those of the prostate or endometrium than other vegetarian diets or typical omnivorous diets (8).

Critique

A list of professional evaluation statements and the macrobiotic diet include:

"The explanation given for these effects concern energy, vibrations, and yin-yang balance, all abstract notions that cannot be measure or even detected (17)."

"There is no scientific evidence of any such benefit, and the diet itself can cause cancer patients to undergo serious weight loss (18)."

"The macrobiotic diet does not conform to any accepted theory of nutritional support for cancer patients, not has it been demonstrated by properly controlled experiments to be helpful in maintaining nutritional status among cancer patients (19)."

From these critiques even though some may be more outdated the preferred, they are still accurate in that no conclusions have been made for the macrobiotic diet in cancer prevention or therapy. The ultimate choice is the patients, with a doctor's supervision strongly recommended.

The macrobiotic diet does have value if not taken to extremes. The diet lowers fat and cholesterol in the body, and increases antioxidant and

phytochemical consumption, which has been shown to decrease oxidative damage that contributes to carcinogenesis.

Summary and Future Directions

Kushi et al. (2001) states that "Macrobiotic diets are among the most popular alternative approaches to management of cancer in use in the United States today (8)." The interest in macrobiotics is fueled by both the lack of effective conventional therapies for many cancers and by dramatic recovery of case reports for those using the macrobiotic diet. The acknowledgment that the standard macrobiotic diet does play a prominent role in cancer prevention and its expression as a dietary recommendation in public health to decrease cancer risk has also increased interest in the macrobiotic approach to cancer (17). Not only that, but there is an increasing recognition that progression of cancer after diagnosis is influenced by dietary factors despite the relatively few studies to examine these relationships.

"Although no studies have examined directly the effect of macrobiotics on cancer prevention, studies have indicated that women following a macrobiotic diet have somewhat lower plasma estradiol levels and higher urinary excretion levels of phytoestrogen metabolites and therefore may be at lower risk of hormone-dependent cancers (8)". Additionally, foods that are recommended for consumption in the standard macrobiotic diet are associated with a decreased risk of cancer, and the foods that are generally minimized in macrobiotics diets are thought to increase the risk of cancer. Therefore, it is reasonable that the

macrobiotics diet may carry a substantially reduced risk of cancer in comparison with the standard U.S. dietary patterns.

To determine whether the macrobiotic diet, or any diet, is effective in preventing cancer, enhancing quality of life, or prolonging survival from cancer more systematic studies using recognized study designs such as those of epidemiology would be required (17). In using this type of epidemiological design, it could possibly determine whether people following a macrobiotic lifestyle are at a reduced risk of cancer or those people with cancer who follow a macrobiotic diet enhance their quality of life and improve survival. The fact that macrobiotics is not a single agent must also be taken into account. Fawzy and Fawzy (1998) state "The macrobiotic diet is individualized and multidimensional. In addition to the diet, psychosocial aspects of the adoption of macrobiotics may also play key roles in its effectiveness (19)". Until further studies are done, the role of macrobiotics or other dietary or lifestyle interventions in cancer therapy remains in the realm of speculation (8).

REFERENCES

- 1) Frydman, L. (2004, December 3). Macrobiotics 101. Chicago Sun-Times, pp. 5, 6.
- 2) Macrobiotic Diets/ Zen macrobiotics. (2005). From the BC Cancer Agency. Retrieved February 3, 2005, from the World Wide Web: http://www.bccancer.bc.ca/PPI/Unconventional_Therapies.htm.
- 3) Macrobiotic Diet. (2005). From Thomson Healthcare. Retrieved February 3, 2005, from the World Wide Web: <http://www.pdrhealth.com>.
- 4) Kogut, Valerie. (2001) Complementary and Alternative Dietary Therapies. *Clinical Journal of Oncology_Nursing*, 5, 283-286.
- 5) What is Macrobiotics? (2005). From the Kushi Institute. Retrieved February 17, 2005, from the World Wide Web: <http://www.kushiinstitute.org>
- 6) American Dietetic Association. (2003). Position of the American Dietetic Association and Dietitians of Canada: Vegetarian diets. *Journal of American Dietetic Association* , 103.
- 7) Dwyer, JT. (1999). Convergence of plant-rich and plant-only diets. *American Journal of Clinical Nutrition*, 70, 620S-622S.
- 8) Kushi LH, Cunningham JE, Heber JR. (2001). The Macrobiotic Diet in Cancer. *Journal of Nutrition*, 131, 3056S-3064S.
- 9) Cunnigham, E., Marcaason, W. (2001). Is There Any Research to prove that a Macrobiotic Diet can prevent or cure cancer? *Journal of American Dietetic Association*, 101, 9.
- 10) Kushi, M. & Jack, A. (1993) *The Cancer Prevention Diet: Michio Kushi's Macrobiotic Blueprint for the Prevention and Relief of Disease*. St. Martin's Press. New York, NY.
- 11) Hamilton, K. (2000). Complementary care corner. *ON-LINE*, 8(1), 11-13.
- 12) Jacobs, D.R., Jr, Marquart, L., Slavin, J. and Kushi, L.H. (1998) Whole-grain intake and cancer: an expanded review and meta-analysis. *Nutrition in Cancer*, 30, 85-96.
- 13) Nishino, H. (1998) Cancer prevention by carotenoid. *Mutation Resources*. 402, 159-163.
- 14) Steinmetz, K. A. and Potter, J.D. (1998). Vegetables, fruit, and cancer. II. Mechanisms. *Cancer Causes_Control*, 2, 427-442.
- 15) Ingram, D., Sanders, K., Kolybaba, M. & Lopez, D. (1997). Case-control study of phyto-estrogens and breast cancer. *Lancet*, 350, 990-994.
- 16) Cassileth, BR. (1998). *Alternative medicine handbook: the complete reference guide to alternative and complementary therapies*. New York: W. W. Norton & Co., 99-103.
- 17) Hafner, AW. (1993). *Reader's guide to alternative health methods*. Milwaukee, Wisconsin: American Medical Association, 247-252.

- 18) (1993). Questionable methods of cancer management 'nutritional' therapies. *CA: A Cancer Journal for Clinicians*, 43, 309-319.
- 19) Fawzy, F.I., Fawzy, N.M. (1998). Psychoeducational interventions. Holland, J.C. eds. *Psycho-Oncology*, 676-693 Oxford University Press New York, NY.