Effects of Phytoestrogens on Women's Health When Substituted for HRT


Menopausal hormone therapy, also known as hormone replacement therapy (HRT), has been used for more than 40 years to reduce osteoporosis risk and menopausal symptoms in menopausal women. An increased interest by consumers in natural products to replace HRT led the authors to review the current literature on plant-derived compounds with estrogenic activity, also known as phytoestrogens. [This review was conducted prior to the announcement by the U.S. National Institutes of Health in July 2001 that HRT increases the risk of breast cancer and cardiovascular disease, resulting in the termination of at least two long-term HRT studies.]

Phytoestrogens are plant compounds that show weak estrogenic activity. Of the four main types of phytoestrogens (isoflavones, coumestans, lignans, and resorcylic acid lactones), the isoflavones, in particular genistein and daidzein from soy and other legumes, are the most important in terms of their level of activity and abundance in the diet, and amount of research performed. This article summarizes published experimental data about possible benefits and risks associated with use of phytoestrogens, and compares these to the known benefits and risks of prescribed HRT.

The authors culled 74 studies from more than 1,000 published articles on phytoestrogens published from January 1, 1966, through September 30, 1999. The studies were selected based on English language, relevance, use of human subjects wherever possible, and strong study design, with preference given to randomized, blinded, controlled studies over observational or epidemiological studies. Most of the information on phytoestrogens comes from in vitro or animal studies, with little rigorous clinical research on humans. The available epidemiological and observational studies are subject to a host of confounding factors. The authors consider data supporting HRT to be much more convincing than that for phytoestrogen consumption, but they acknowledge that the evidence on the benefits of phytoestrogens is increasing.

The authors found evidence in the literature that phytoestrogens have several potential anticancerogenic properties against hormone-dependent and other cancers. Genistein appears to be the primary anticancer constituent of soy (Glycine max (L.) Merr., Fabaceae), exhibiting antioxidant properties and suppression of enzymes that promote cell growth. The authors state that no recommendations can be made concerning phytoestrogen use in cancer prevention and treatment except that there have been encouraging effects in vitro.

HRT is linked to the development of breast cancer. Observational studies of countries in which dietary phytoestrogen intake is high have very low incidences of breast cancer. However, animal and in vitro studies cited in this article suggest that genistein could actually be a tumor
promotor, depending on its concentration in the cell. In addition, the authors postulate that, with the evidence they found in the literature, phytoestrogens may protect against breast cancer before menopause, but may stimulate development of breast cancer in the low-estrogen environment of menopause.

HRT has been shown to lower total serum cholesterol and increase the high-density lipoprotein cholesterol (the "good" cholesterol) level. Phytoestrogens, especially those from soy, have been investigated as possible lipid-lowering agents due to epidemiological evidence that the incidence of cardiovascular disease in countries where large amounts of soy are consumed is lower than others. Some large and many small studies show mostly positive results in linking soy isoflavones with a reduction in serum lipids in persons with hypercholesterolemia. Despite the difficulty in synthesizing data from numerous and varied studies, current research results point to phytoestrogen having a beneficial effect on lipid values, and no studies have shown elevation of lipid values due to phytoestrogen intake.

Most women start HRT to reduce hot flashes. Few controlled studies have examined the effect of phytoestrogens on menopausal symptoms, and those that show statistically significant results are of questionable clinical significance.

The authors caution that, while evidence in favor of phytoestrogens increases, important issues need resolution. Potential theoretical adverse effects include inducing breast cancer in low-estrogen environments. Current evidence is too sparse to develop dosage recommendations or formulations of phytoestrogens. Many questions surround their use, and the authors suggest prospective randomized controlled trials to observe the effects and safety of varying formulations and dosages of phytoestrogens on various tissues.

The authors conclude that recommending replacement of HRT with phytoestrogen use is premature and not supported by current research. Despite these cautions, no definitive evidence shows that consumption of phytoestrogens in normal dietary amounts is harmful. The authors encourage a prudent diet high in plant foods and low in meat and saturated fat, which would result in increased overall phytoestrogen intake and is consistent with current dietary recommendations.

While this well-researched and thorough article furthers understanding of available data through 1999, recent heightened interest in phytoestrogen use in disease prevention, together with definitive proof that HRT is inappropriate for disease prevention because it does more harm than good in healthy women, should encourage more up-to-date information on phytoestrogen use.

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