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Editorial

The Advantages and Disadvantages of Phytoestrogens

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Phytoestrogens are plant-derived chemicals found in various foods, the most prominent in soy. Many health benefits are attributed to phytoestrogens, including a reduced incidence of osteoporosis, breast cancer, menopausal symptoms, and heart disease; however, many are also classified as endocrine disruptors, which can potentially create adverse health effects. As a result, whether phytoestrogens are good or hazardous to one's health has yet to be answered. The answer is likely complicated, and it could be influenced by factors, namely health, age, and the presence or absence of specific gut bacteria. Because worldwide consumption is continually expanding, clarity on this subject is required. On the other hand, phytoestrogens are frequently advertised as a natural alternative to estrogen replacement therapy and are included in various dietary supplements. Because phytoestrogens have molecular and cellular properties similar to those of artificial endocrine disruptors, such as bisphenol A (BPA), and are also weak estrogen agonists/antagonists, making them valuable models for general understanding of the biologic effects of endocrine disruptors [1–3].

How may phytoestrogens possibly function in the body to give all of the claimed health benefits? Certain isoflavones, particularly genistein, impede cell growth and proliferation pathways, which has ramifications throughout different organ systems. In several tissues, including breast cancer cells, genistein blocks the action of protein tyrosine kinases (PTKs). Genistein can potentially decrease carcinogenesis by blocking PTKs, a property that has led numerous laboratories to look at its therapeutic abilities in prostate and breast cancer. PTKs are abundantly found in multiple brain areas, such as the hippocampus, and their phosphoregulation is required for various brain responses, such as neurodegeneration, synaptic plasticity, and neuronal injury response. Genistein decreases PTK expression in the brain at high doses, regarded as neuroprotective. Inhibiting PTK activity may also help to improve cardiovascular function and obstruct tumor vascularization. Other DNA replication enzymes linked to cancer that genistein can block include DNA topoisomerases I-II and matrix metalloproteinases (MMP9). It can suppress the vascular endothelial growth factor (VEGF) expression and other growth factor genes. Phytoestrogens have potent antioxidants and anti-inflammatory properties, particularly resveratrol and genistein. Genistein, resveratrol, and other isoflavones exhibit estrogen receptor (ER)-independent characteristics have been shown to have the ability to modify a variety of intracellular signaling systems that are essential for controlling cellular growth and protection [1–6].

Numerous epidemiological and clinical research has been conducted to understand the link between phytoestrogen diet and human disease outcomes. Still, the findings have yet to reveal whether these substances have therapeutic abilities. Dose, food composition, phytoestrogens delivered, and duration of usage differ significantly amongst epidemiological research, making intercomparison difficult. However, there is great

interest in making valid claims about bone, breast, heart, and menopausal symptoms advantages [1–6].

The first commonly acknowledged health effect of phytoestrogen use in menopausal women was the reduction of perimenopausal vasomotor symptoms such as night sweats and hot flushes. The severity of these symptoms can interfere with daily activities and significantly reduce a woman's quality of life. Although hormonal drugs are helpful in most cases, they have become unpopular because it is feared that their use may increase the risk of breast cancer. Vasomotor symptoms are more common in Western countries (70–80 percent of women) than in Asian countries (10–20 percent); as a result, soy phytoestrogens are now largely believed to be beneficial. Unfortunately, there is only shaky evidence for such a link, with most clinical trials revealing no or minor relief. A significant placebo effect is a trait that appears in nearly all investigations. The North American Menopause Society stated in 2004 that "Among non-prescription therapies, clinical study findings are inadequate to confirm or contradict the efficacy of soy diets and isoflavone supplementation (from either soy or red clover), vitamin E, or black cohosh." Despite this ambiguity, women seeking a hormone replacement treatment in natural alternative continue to use dietary supplements as hope for the future [1–3].

Phytoestrogens are noteworthy because, although they behave like some synthetic substances in laboratory models of endocrine disorders, society favors these molecules, often vehemently rejecting synthetic endocrine disorders in household items. Phytoestrogens thus broaden our understanding of environmental endocrine disruptors while also suggesting that the source of a substance might impact the interpretation of the study. While the phytoestrogen potential benefits use has been aggressively explored and usually exaggerated, the chemicals' possible negative effects are largely neglected. On the other hand, synthetic endocrine disruptors have smaller binding affinities for classical ERs than phytoestrogens, but they can have identical biological consequences. According to animal evidence, at dosages and plasma levels comparable to those found in humans, isoflavones have numerous molecular, cellular, and behavioral impacts. This could change soon as public health organizations pay more attention to the health impacts of endocrine-disruptive substances [1–6].

The major topics of articles in this edition are phytoestrogen. The menopausal woman also the climacteric period will be the greater composition of demography in the future. Menopausal symptoms are critical clinical problems and need to be resolved. Hormone replacement therapy needs specific precautions. It means that phytoestrogen is one significant hope as an alternative and complementary therapy for long duration for menopause women in the future era.

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