



**Dear Dr. Hoo,**

**My sister has been diagnosed with breast cancer. My aunt also had breast cancer. What can I do to prevent my risk of developing cancer?**

A family history of breast cancer is considered a risk factor, however, there are many issues to address, both environmental and genetic.

Scientists used to only be concerned with identifying specific cancer genes but recent research into the effects of nutrition and environmental pollutants on genes have evolved into the idea of “epigenetics” and “nutritional hormesis”. A great review on the latter by Hayes has recently been published in the *European Journal of Clinical Nutrition* (2007) 61, 147-159.

Xenohormesis is derived from the root word “xeno” (foreign) and “hormesis” (relating to control). Essentially, xenohormesis pertains to how certain types of food and substances within them (both natural and synthetic) or environmental pollutants, can have positive or negative influences on virtually every cell, tissue and organ in the body.

These substances may alter cellular function due to its presence in our food supply, water and even the air we breathe. The foods we eat can translate messages into our cells through enzymes or proteins called kinases which through their activation or inhibition, may alter the genetic expression of a cell and change its function in response to the original message. Ultimately, epigenetic mechanisms such as DNA methylation, and their effects in gene activation and inactivation, are increasingly understood to be essential in the expression of our genes (or phenotype).

For example, in the realm of cancer, researchers at UCLA found that diindolymethane (DIM), a compound resulting from digestion of cruciferous vegetables (eg. broccoli and brussel sprouts), and genistein, an isoflavone in soy, reduce the production of two proteins needed for breast and ovarian cancer to spread.

Ongoing research into phytochemicals within foods (eg. turmeric as anti-inflammatory and promoting liver detoxification) serves only to support what natural healthcare practitioners have known for centuries in that disease processes often begin by the

alteration of the matrix within which our genes are exposed to, leading to the age old idea that “you are what you eat”.

Cancer prevention is a complex issue with many complex issues to consider; as such, please consult with your healthcare provider to ensure that your healthcare goals are addressed or call us for further information.

Dr. Aaron Hoo

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