

## STUDY SUMMARY

Enhancement of Cardio-Protective Effects and Attenuation of Adverse Effects of Female Sex Hormones on Cultured Human Vascular Smooth Muscle Cells by a Combination of Ascorbic Acid, Lysine, Proline, Arginine, Cysteine, and Epigallocatechin Gallate

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Hormone replacement therapy (HRT) was a standard treatment prescribed for menopausal symptoms such as hot flashes, mood swings, and osteoporosis until 2002 when the Women's Health Initiative (WHI) study highlighted the cardiovascular risks of HRT. Later it was also proven that HRT was closely associated with an increased incidence of several cancers.

Formation of arterial plaques responsible for heart attacks involves growth of the cells lining the blood vessel walls and their ability to move around and settle at the location of plaque. Similarly, cancers also originate and spread by cell growth and their movement into the tissues. In this in vitro study we assessed the effects of specific micronutrients along with female sex hormones (estrogen and progesterone) on smooth muscle cells. Estrogen and progesterone treatments alone increased the smooth muscle cell growth by 24% and 30%, respectively; however, the treatment with micronutrients inhibited the cell growth by 30% over the control group. The micronutrients also inhibited the cell invasion up to 78%, and significantly reduced the inflammatory marker, interleukin-6. Thus, the micronutrients were effective in reducing the cell stimulatory effects caused by the HRT that could lead to serious side effects such as heart attacks and cancers.