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Primary Article Summary

After looking up some articles on the internet, one article I found is called "*The Effects of Soy Supplementation on Gene Expression in Breast Cancer: A Randomized Placebo-Controlled Study*". This article explores how soy supplementation affects breast cancer related genes and/or pathways. The researchers do this by creating a simple experiment, where around 140 women diagnosed with early-stage breast cancer are randomly assigned to a soy protein supplementation or a type of placebo for 7-30 days until the day of their surgery. As for measuring the results, they were going to use gene expression analysis using Nanostring/qPCR to measure any changes on gene expression and/or any factors that would contribute to or against breast cancerous cells. Additionally, the women's blood was drawn to test for any of the molecules that points to plasma isoflavones or Ki67/Cas3 concentration.

Once the experiment was over, a few women dropped out of the experiment but, for the ones that stayed, they noticed that those in the soy group showed altered expression in a variety of genes that affected breast cancer. These different genes expressed showed overexpression for cell cycle transcripts that promote cell proliferation. This would indicate that the soy supplementation may have contributed to breast cancer. However, another factor that was measured in the analysis were signal molecules known as "Ki67" and "Cas3". Ki67 is a signaling molecule that indicates the presence of cell proliferation, so if there is a high Ki67 concentration, it would mean that cell proliferation is through the roof, which would indicate cancer. As for Cas3, it is a signaling molecule that indicates the presence of cell apoptosis, so if there were a high Cas3 concentration, then that would indicate that apoptosis is happening a lot. So, after the experiment, the women taking the soy supplements had no significant changes in either of these two molecules which would indicate that proliferation and apoptosis percentage did not change that much. Additionally, the researchers also have used something called plasma isoflavones to monitor the progression of the breast cancer in this experiment. Now, isoflavones are a type of antioxidant that would help to fight off things like free radicals and/or cancer. Now when it comes to the results, the level of plasma isoflavones rose in the soy group while remaining the same in the placebo group. This could mean that taking the soy supplements rose the level of a molecule in the plasma of these women which would help to make fighting the breast cancer a little bit easier, even if it is by a fraction. Consequently, with these findings of overexpression, the concentration of Ki67/Cas3, and the plasma isoflavones, the conclusion they came to was that the intake of soy may either negatively affect gene expression in breast cancer for women or just may not have any real effects on the progression/restriction of the breast cancer in women.

References

Shike, M. et al. The effects of soy supplementation on gene expression in breast cancer: a randomized placebo-controlled study. JNCI: Journal of the National Cancer Institute; https://doi.org/10.1093/jnci/dju189 (2014).