

Study finds combo of plant nutrients kills breast cancer cells

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A study led by Madhwa Raj, PhD, Research Professor in Obstetrics and Gynecology at LSU Health Sciences Center New Orleans and its Stanley S. Scott Cancer Center, has found that a super cocktail of six natural compounds in vegetables, fruits, spices and plant roots killed 100% of sample breast cancer cells without toxic side effects on normal cells. The results, which also revealed potential treatment target genes, are published in the November 2013 issue of *The Journal of Cancer*.

"One of the primary causes of both the recurrence of breast cancer and deaths is a small group of cancer stem cells that evade therapy," notes Dr. Raj. "These often multi-drug-resistant cells have the ability to generate new tumors, so it is critically important to develop new approaches to more effective and safer treatment or prevention of breast cancer."

The research team tested ten known protective chemical nutrients found in foods like broccoli, grapes, apples, tofu, and turmeric root (a spice used in Indian curry) before settling upon six – Curcumin known as tumeric, Isoflavone from soybeans, Indo-3-Carbinol from cruciferous plants, C-phycocyanin from spirulina, Resveratrol from grapes, and Quercetin, a flavonoid present in fruits, vegetables, and tea. The researchers administered these six at bioavailable levels to both breast cancer and control cells. They tested the compounds individually and in combination. They found that the compounds were ineffective individually. When combined, though, the super cocktail suppressed breast cancer cell growth by more than 80%, inhibited migration and

invasion, caused cell cycle arrest, and triggered the process leading to cell death resulting in the death of 100% of the breast cancer cells in the sample. The researchers observed no harmful effects on the control cells. Further analysis also identified several key genes, which could serve as markers to follow the progress of therapy.

Although the cocktail was not tested against BRCA1 and BRAC2, previous studies have shown that they are molecular targets of four of the six compounds. The researchers also earlier demonstrated that two of the compounds synergize effectively to kill ovarian cancer [cells](#).

According to the National Cancer Institute's SEER Program, which includes data from LSU Health Sciences Center New Orleans, breast cancer is the second most common cancer with 232,340 new cases estimated this year and 39,620 deaths. There are an estimated 2,829,041 women currently living with [breast cancer](#) in the United States.

Provided by Louisiana State University

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