

Active component of grape seed extract effective against cancer cells

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An active ingredient of grape seed extract, B2G2, acts against cancer cells.

A University of Colorado Cancer Center study published online ahead of print in the journal *Nutrition and Cancer* describes the laboratory synthesis of the most active component of grape seed extract, B2G2, and shows this synthesized compound induces the cell death known as apoptosis in prostate cancer cells while leaving healthy cells unharmed.

"We've shown similar anti-cancer activity in the past with grape seed extract (GSE), but now we know B2G2 is its most biologically active ingredient which can be synthesized in quantities that will allow us to study the detailed death mechanism in cancer cells," says Alpna Tyagi, PhD, of the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences. Tyagi works in the lab of CU Cancer Center investigator and Skaggs School of Pharmacy faculty member, Chapla Agarwal, PhD.

The group has spent more than a decade demonstrating the anti-cancer activity of GSE in controlled, laboratory conditions. For example, previous studies have shown the GSE effectiveness against cancer cells and have also shown its mechanism of action. "But until recently, we didn't know which constituent of GSE created this effect. This naturally occurring compound, GSE, is a complex mixture of polyphenols and also so far it has been unclear about the biologically active constituents of GSE against [cancer cells](#)," Tyagi says.

Eventually the group pinpointed B2G2 as the most active compound, but, "it's expensive and it takes a long time to isolate B2G2 from [grape seed extract](#)," Tyagi says.

This expense related to the isolation of B2G2 has limited the group's further exploration. So instead of purifying B2G2 from GSE, the group decided to synthesize it in the lab. The current study reports the success of this effort, including the ability to synthesize gram-quantity of B2G2 reasonably quickly and inexpensively.

In the paper's second half, the group shows anti-cancer activity of synthesized B2G2 similar in mechanism and degree to overall GSE effectiveness.

"Our goal all along has been a clinical trial of the biologically active

compounds from GSE against human cancer. But it's difficult to earn FDA approval for a trial in which we don't know the mechanisms and possible effects of all active components. Therefore, isolating and synthesizing B2G2 is an important step because now we have the ability to conduct more experiments with the pure compound. Ongoing work in the lab further increases our understanding of B2G2's mechanism of action that will help for the preclinical and clinical studies in the future," Tyagi says.

More information: [www.tandfonline.com/doi/abs/10...
01635581.2013.783602](http://www.tandfonline.com/doi/abs/10.1080/10635581.2013.783602)

Provided by University of Colorado Denver

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