

Grape Seed Extract Selectively Targets Colorectal Cancer Cells

By *Delicia Honen Yard*



Grape seed extract was shown to inhibit the growth and survival of colorectal cancer cells in advanced disease while leaving healthy cells undisturbed in a recent study.

“We've known for quite a while that the bioactive compounds in grape seed extract selectively target many types of cancer cells,” explained investigator Molly Derry in a statement from the University of Colorado in Denver. Derry is a doctoral candidate in the lab of study coauthor Rajesh Agarwal, PhD, of the University of Colorado Cancer Center in Aurora, Colorado.

Now, according to Derry, the findings demonstrate that many of the same mutations that allow colorectal cancer cells to metastasize and survive traditional therapies make them especially sensitive to treatment with grape seed extract. As

she and her colleagues reported in *Cancer Letters*, they experimented on colorectal cancer cell lines representing various stages of the disease.

The investigators found that grape seed extract selectively induced apoptosis (programmed cell death) in human colorectal cancer cells. Moreover, the efficacy of this treatment increased as the metastatic potential of the cancer cells increased.

Whereas generally much more chemotherapy is needed to kill a stage IV cancer cell than a stage II cell, Derry's group found the reverse to be true with grape seed extract. "It required less than half the concentration of [grape seed extract] to suppress cell growth and kill 50% of stage IV cells than it did to achieve similar results in the stage II cells," recounted Derry in the statement.

The researchers identified several contributors to colorectal cancer cell death induced by grape seed extract: oxidative stress, loss of mitochondrial membrane potential, modulation of pro- and anti-apoptotic proteins, and involvement of both caspase-dependent and caspase-independent apoptotic pathways.

Considering the growing prevalence of colorectal cancer due in part to high-fat diets, sedentary lifestyles, and low screening rates, Derry noted that 60% of persons diagnosed with the disease already have reached an advanced stage. For this reason, "Finding a way to selectively target advanced colorectal cancer cells could have major clinical importance," she affirmed.