

# Clinical trial tests rice bran to prevent cancer

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A recent University of Colorado Cancer Center review in the journal *Advances in Nutrition* shows that rice bran offers promising cancer prevention properties. Meanwhile, an ongoing clinical trial is testing the effectiveness of rice bran in preventing the recurrence of colon cancer.

"While I have been trained as a molecular toxicologist, I am excited about the opportunities to deliver bioactive, cancer fighting compounds with food, and this has led to my focus now primarily on the multiple drug-like characteristics of rice bran," says Elizabeth P. Ryan, PhD, CU Cancer Center investigator, assistant professor in the Department of Environmental and Radiological Health Sciences at the CSU Animal Cancer Center, and the review's senior author. "There's a delicate balance of [bioactive components](#) in rice bran that together show anti-cancer activity including the ability to inhibit [cell proliferation](#), alter cell cycle progression and initiate the [programmed cell death](#) known as apoptosis in [malignant cells](#)," Ryan says.

Ryan and colleagues show that bioactive rice bran derived small molecules include, but are not limited to polyphenolics, ferulic acid, tricin,  $\beta$ -sitosterol,  $\gamma$ -oryzanol, tocotrienols/tocopherols, and phytic acid.

"We're working now to tease apart the ratios of these active molecules required for bioactivity and mechanisms. Previous attempts to isolate one or another compound have been largely unsuccessful and so it looks now as if rather than any one compound giving rice bran its chemopreventive powers, it's the synergistic activity of multiple components in the whole food that should be studied."

Work with cancer cell lines and animal models shows that the bioactive components of rice bran act not only within cancer cells but around the cells to create conditions in the surrounding tissues that promote the function of healthy cells while inhibiting the function of [cancer cells](#). This tissue microenvironment activity includes mediating [chronic inflammation](#) that provides a ripe landscape for cancer. Ryan and colleagues including Tiffany Weir, PhD, and Rajesh Agarwal, PhD, are collaborating to evaluate how rice bran may also help to promote an anti-cancer immune response and modulate gut microbiota metabolism for protection against cancer.

"There are well over 100,000 varieties of rice in the world, many with their own unique mix of bioactive components and so one major challenge is to discover the optimal composition for chemoprevention. Another challenge is ensuring that people consistently receive the required daily intake amount or 'dose' needed to demonstrate these chemo-protective effects. That said, rice is an accessible, low-cost food in most places of the world, and so work with rice bran as a dietary chemopreventive agent has the potential to impact a significant portion of the world's population," Ryan says.

Ryan has taken the next step in the evolution of [rice bran](#) from diet to prescription, in the form of an ongoing clinical trial testing its chemopreventive effectiveness in a population of colon cancer survivors.

Provided by University of Colorado Denver

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