



Citrus Products May Help Prevent Prostate Cancer

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A study published in the June issue of the *Journal of Agriculture and Food Chemistry* suggests that a compound in citrus pectin may help prevent prostate cancer. The study is the result of collaborative research among scientists at the [Texas A&M University System Health Science Center](#), in Houston, the [Texas A&M-Kingsville Citrus Center](#) at Weslaco, and the [University of Texas-Pan American](#) at Edinburg.

Pectin is a complex carbohydrate found in many plants but is most abundant in citrus and has already been shown to reduce cholesterol and blood sugar. While the current study focused mainly on prostate cancer, scientists say pectin may also inhibit other types of cancer.

Dr. Bhimu, Patil, a physiologist at the Citrus Center, who isolated pectin from four citrus varieties, said the study is preliminary but justifies further investigations in pre-clinical animal models, then possibly in humans. A Texas A&M-Kingsville graduate student, Yan Liu, conducted a major part of this study, Patil said. "This is the first study that identifies a specific molecular target by which citrus pectin may effect the development of cancer," Patil said. The study shows that a component derived from pectin can effect the mis-communication that occurs between cells of the prostate that can lead to malignancy, the life-threatening stage of cancer.

"There's cross-talk among cells of the prostate that keeps the prostate healthy," said [Dr. Wallace McKeehan](#), a cell biologist the Institute of Biosciences and Technology, a member of the TAMUS Health Science Center. "During malignancy, the signals get garbled and the cells don't understand each other. You end up with rogue cells that are not behaving properly because they are not getting the right signals. They begin signaling and stimulating themselves and grow too much."

Overgrowth of the cells or failure to stop growth properly is a symptom of cancer, McKeehan said. "We've plugged the elements of citrus pectin into the signal mechanisms that have gone haywire and shown that pectin can potentially effect that system and set it back to normal," he said. The next step is to identify chemically the active ingredient in pectin that produced the favorable, in-vitro test results.

"Once we identify exactly what it is in pectin that has this effect, the long term goal would then be to resolve the issue of how best to deliver it to the consumer," said McKeehan.

Patil said that could be accomplished in several ways, including enhancing pectin's presence in citrus by altering growing and harvesting practices, or by extracting and modifying the active ingredient of pectin and making it available in other foods or as a supplement.

Dr. Hassan Ahman, an associate professor of biochemistry at UT-Pan Am, said his role in the collaboration was to purify various sizes of pectin after Patil isolated the carbohydrate from lemons, grapefruit, oranges and tangerines, to ensure that scientists at the Health Science Center were working only with specific sizes of pectin and not with any contaminants.

“Hopefully, our next role in this study will be to break down the bigger pectin molecule into smaller molecules, separate them and determine if any specific part of the pectin molecule is responsible for this inhibiting effect,” he said.

Patil said that of the Texas citrus varieties tested, pectin from all four varieties showed levels of cancer inhibition but were highest in pectin from lemons and those grapefruit harvested in the month of January.

“To get the best benefits of pectin, it’s best to eat the whole fruit and not just the juice since the highest concentrations from pectin are found in the meat of the fruit and in the membrane that separates the segments,” he said.

The Texas A&M University System Health Science Center serves the state as a distributed, statewide health science center, which is present in communities throughout Texas. The health science center includes five institutions which are dedicated to meeting the highest standards in health education, outreach and research: Baylor College of Dentistry, the College of Medicine, the Graduate School of Biomedical Sciences, the Institute of Biosciences and Technology, and the School of Rural Public Health.

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