

Study Describes Mechanism Linking Alcohol with Risk of Breast Cancer

The known association of alcohol consumption with an increased risk of breast cancer has been linked by researchers at the University at Buffalo to a process that causes genes that promote normal cell growth to produce proteins that precipitate unregulated cell growth, an action known as hypermethylation.

"It is well known that alcohol consumption is associated with increased risk of breast cancer," said Menghua Tao, Ph.D., research assistant professor in the UB School of Public Health and Health Professions, "but the mechanisms of action are still unclear.

"In our population study, we found that alcohol consumption is associated with increased likelihood of hypermethylation of the E-cadherin gene."

Yao presented the results of her study during a poster session at the American Association of Cancer Research meeting held recently in San Diego.

Yao and colleagues analyzed tumor blocks from 803 women who took part in UB's Western New York Exposures and Breast Cancer (WEB) Study. Information on the history of alcohol consumption at various time points prior to cancer diagnosis was collected along with other data when women enrolled in the study.

Hypermethylation of this gene was twice as likely to be found in tumors of women classified as "ever drinkers" than in those classified as "never drinkers," results showed.

"Other researchers had shown that adding ethanol (drinking alcohol) to cancer cells can cause less expression of the E-cadherin gene," said Tao, "and we already knew that hypermethylation of E-cadherin is the reason for decreased expression of the gene.

"Decreased expression then relates to loss of differentiation, increased invasiveness and decreased cancer patient survival. Putting all this information together, we think that one action of alcohol on breast cancer might be through hypermethylation of genes, including E-cadherin".

This mechanism was linked with an increased risk of postmenopausal breast cancer, but not premenopausal breast cancer, the study showed.

Scientists from Georgetown University in Washington, D.C., and Roswell Park Cancer Institute in Buffalo also were involved in the study.

Source: University at Buffalo

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