Sugary Drinks May Increase Risk of Metastasis in Advanced Colorectal Cancer

The mix of glucose and fructose found in most sodas and fruit juices activates an enzyme that fuels cancer cell migration.

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- Preclinical study provides first direct evidence linking colorectal cancer metastasis to the glucose-fructose blend found in sugar-sweetened beverages.
- Metastasis is the leading cause of death among patients with colorectal cancer.
- The combination of glucose and fructose, found in most sodas and fruit juices, activates the SORD enzyme, fueling cancer cell migration and metastasis.
- Study suggests cutting back on sugary drinks could help slow cancer progression in patients with colorectal cancer and points to possible new treatment targets.

A new study from researchers at The University of Texas MD Anderson Cancer Center shows that the glucose-fructose mix found in sugary drinks directly fuels metastasis in preclinical models of advanced colorectal cancer. The study was published today in Nature Metabolism.

What are the key findings of this study?

A research team led by Jihye Yun, PhD, assistant professor of Genetics, studied how sugary drinks may affect late-stage colorectal cancer. Using laboratory cancer models, they compared the effects of the glucose-fructose mix found in most sugary drinks with those of glucose or fructose alone. Only the sugar mix made cancer cells more mobile, leading to faster spread to the liver — the most common site of colorectal cancer metastasis.

The sugar mix activated an enzyme called sorbitol dehydrogenase (SORD), which boosts glucose metabolism and triggers the cholesterol pathway, ultimately driving metastasis. This is the same pathway targeted by statins, common heart drugs that inhibit cholesterol production. Blocking

SORD slowed metastasis, even with the sugar mix present. These findings suggest that targeting SORD could also offer an opportunity to block metastasis.

“Our findings highlight that daily diet matters not only for cancer risk but also for how the disease progresses once it has developed,” Yun said. “While these findings need further investigation, they suggest that reducing sugary drinks, targeting SORD or repurposing statins may benefit patients with colorectal cancer.”

Why did the researchers study sugary drinks in colorectal cancer?

The Yun Laboratory is interested in studying how diet affects the intestine and cancer development, and they have made important discoveries on the impacts of sugary drinks on colorectal cancer.

Sugar has long been indirectly linked to an increase in cancer risk through obesity. However, a previous study by Yun’s lab challenged that view, showing that even moderate intake of sugary drinks directly fueled tumor growth in early-stage colorectal cancer, independent of obesity. The current study was done to determine how sugary drinks may impact later-stage disease.

What does this study mean for patients and the public?

While this study needs further clinical investigation, the results suggest that reducing sugary drinks and targeting the SORD enzyme may offer opportunities to reduce colorectal cancer metastasis. Additional studies are warranted to confirm these results outside of preclinical models.

Further, Yun explained it may be worthwhile to consider revisions to current dietary recommendations to reduce sugary drink consumption in this patient population. To meet nutritional needs, many patients with cancer are encouraged to have nutritional supplement drinks and concentrated juices that contain high glucose and fructose content.

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