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BUSM scientists discover new strategy to treat colon cancers driven by mutant KRAS genes

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Researchers from Boston University School of Medicine (BUSM) have discovered a possible strategy to treat colon cancers that are caused by the mutant KRAS gene, which is responsible for approximately half of all colon cancer cases.

The findings, which appear online in the journal *Molecular Cancer Research*, may lead to better therapeutic agents to treat this disease.

Colon cancer is the third leading cause of cancer-related deaths in the U.S. Routine screenings by undergoing a colonoscopy have helped reduce mortality rates, however, if the disease advances to malignancy, it can be very difficult to treat. Cancers with the KRAS gene mutation respond poorly to currently available therapeutic agents.

"Our study provides a new strategy to treat colon cancers driven by the mutant KRAS gene, which is based on targeting additional genes that cooperate with KRAS to promote tumor growth. These additional genes, notably MEK and TAK1, can be blocked by selective therapeutic agents to suppress colon cancer cellular proliferation and viability," explained corresponding author Anurag Singh, PhD, assistant professor of pharmacology & experimental therapeutics at BUSM.

The researchers tested 40 colon cancer cell lines that were derived from human colon cancer samples for sensitivity to inhibitors of MEK and TAK1. They found that treating those cell lines with MEK and TAK1 inhibitors suppressed the growth of mutant KRAS-driven colon cancer cells significantly as compared to the control group.

According to Singh, a key goal of "precision medicine" is to identify specific vulnerabilities that can be blocked with selective and effective drugs. "With this study we have uncovered a novel pathway in a subset of colon cancers driven by mutant KRAS gene activation, representing an important axis of vulnerability with the potential to selectively treat these types of tumors in the clinic," he added.

Source:

Boston University Medical Center
