Researchers discover effective combination immunotherapy for liver cancer

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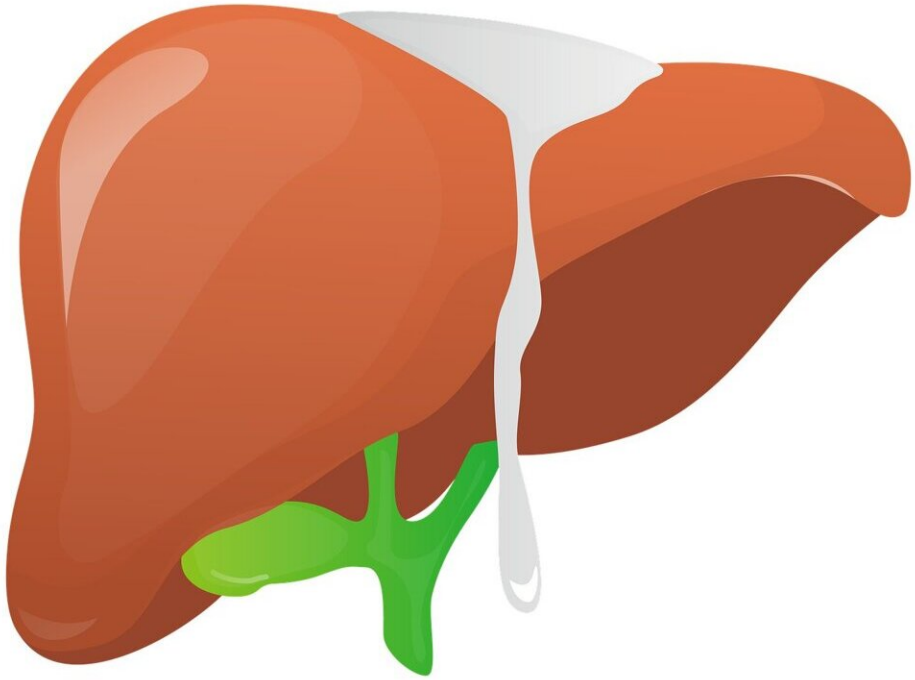

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Researchers from the University of Missouri School of Medicine have discovered a specific combination immunotherapy that shows promise in the fight against liver cancer.

The therapy involves a tumor-suppressing lipid molecule called nanoliposome C6-ceramide (LipC6) and an antibody for cytotoxic T-lymphocyte antigen 4 (CTLA4). When used together in this study, LipC6 and the anti- CTLA4 antibody significantly slowed tumor growth and enhanced the strength of tumor-attacking T cells.

"Our analysis revealed the combination therapy significantly extended the life span of tumor-bearing mice compared to the mice with a single type of therapy or no therapy at all," said co-principal investigator Guangfu Li, Ph.D., DVM, associate professor in the Department of Surgery and Department of Molecular Microbiology and Immunology.

Li said this finding is especially promising given the current lack of effective therapies against liver cancer, which is the third-leading cause of cancer-related deaths in the U.S. For patients diagnosed with liver cancer, the average five-year survival rate of all stages is 20%, according to the American Cancer Society.

"What is particularly notable is that we have now demonstrated that LipC6 treatment significantly improves the ability of anti-CTLA-4 antibodies to suppress liver cancer," Li said. "LipC6 and anti-CTLA4 antibody have been approved by the FDA to use in human patients, so this combination treatment can be quickly translated to clinical application."

More research will be required to better understand the underlying mechanisms behind the success of this combination.

"The human therapeutic response to another commonly used type of immunotherapy, anti-PD-1, is only about 14% in liver cancer patients," said co-principal investigator Kevin F. Staveley-O'Carroll, MD, Ph.D., professor in the Department of Surgery. "We also tested anti-PD-1 immunotherapy in combination with LipC6, but it showed no benefit

compared to the robust response demonstrated by the combination of LipC6 and anti-CTLA4 antibodies. This represents a new and powerful therapeutic approach."

Their study was recently published by *The FASEB Journal*.

More information: Xiaoqiang Qi et al, Nanoliposome C6-Ceramide in combination with anti-CTLA4 antibody improves anti-tumor immunity in hepatocellular cancer, *The FASEB Journal* (2022). DOI: 10.1096/fj.202101707R

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