Treatment Combo Trigger the Antitumor Immune Response

Researchers have discovered a treatment combination that significantly reduces tumor growth and extends the life span of mice with liver cancer. VulcanChem.

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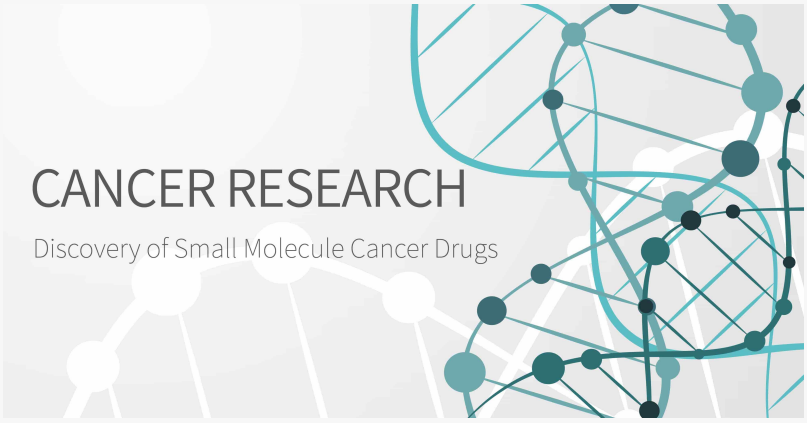

VulcanChem - Cancer Research

PASADENA, CALIFORNIA, UNITED STATES, December 13, 2020 /EINPresswire.com/ -- Researchers from the University of Missouri School of Medicine have discovered a treatment combination that significantly reduces tumor growth and extends the life span of mice with liver cancer. This discovery provides a potentially new therapeutic approach to treating one of the leading causes of cancer-related death worldwide.

Radiofrequency ablation (RFA) is designed to destroy tumors by delivering a high-frequency alternating current through an active needle-electrode introduced into neoplastic tissue. Minimally invasive RFA is used as a first-line treatment option with significant advantages such as lower morbidity, minimized physiologic insult of surrounding tissues, reduced cost, shorter hospitalization time, and intra-procedural visualization for precise targeting. Previous studies have demonstrated that RFA monotherapy is able to activate a tumor-specific T-cell response, but this effect is not sufficient to control hepatocellular cancer (HCC).

In an effort to develop more powerful immune-based therapeutic strategies against HCC, the cancer translational research team consisting of physicians, and basic scientists created an integrative therapy that combined RFA with the chemotherapy drug sunitinib. The team tested this approach in mice by dividing them into four groups: a control group, a group that received only sunitinib, a group that received only RFA, and a group that received both RFA and sunitinib. They discovered the mice receiving combination therapy experienced significantly slowed tumor

growth. This combined treatment significantly increased the frequency of CD8+ T cell, memory CD8+ T cell, and dendritic cells (DCs); decreased the frequency of regulatory T cells; and activated tumor-specific antigen (TSA) immune response in the tumor microenvironment. The life span of the mice in the combination therapy group was significantly longer than all of the other groups.

"These results indicate that the sunitinib and RFA-integrated therapy functions as an effective therapeutic strategy that is superior to each individual therapy, significantly suppressing tumor growth and extending the lifetime of the treated mice," said co-author Eric Kimchi, MD, MBA, Chief of Division of Surgical Oncology and General Surgery, and Medical Director of Ellis Fischel Cancer Center.

About Sunitinib: Sunitinib is a small-molecule multi-targeted receptor tyrosine kinase (RTK) inhibitor. The agent was formally approved by the US FDA for the indications of treating renal cell carcinoma (RCC) and imatinib-resistant gastrointestinal stromal tumor (GIST). Sunitinib is a small molecule that inhibits multiple RTKs, some of which are implicated in tumor growth, pathologic angiogenesis, and metastatic progression of cancer. Sunitinib was evaluated for its inhibitory activity against a variety of kinases (>80 kinases) and was identified as an inhibitor of platelet-derived growth factor receptors (PDGFRa and PDGFRb), vascular endothelial growth factor receptors (VEGFR1, VEGFR2 and VEGFR3), stem cell factor receptor (KIT), Fms-like tyrosine kinase-3 (FLT3), colony stimulating factor receptor Type 1 (CSF-1R), and the glial cell-line derived neurotrophic factor receptor (RET).

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