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Clinical trial evaluates synthetic cannabinoid as brain cancer treatment

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(Medical Xpress)—Researchers at University of California, San Diego Moores Cancer Center are evaluating the safety and tolerability of a synthetic cannabinoid called dexanabinol (ETS2101). Delivered as a weekly intravenous infusion, the drug is being tested in patients with all forms of brain cancer, both primary and metastatic.

"In this Phase I study, we are examining the safety of multiple doses of dexanabinol, extent of penetration into the brain, and suitability for future trials," said Santosh Kesari, MD, PhD, principal investigator, and director of neuro-oncology, UC San Diego Moores Cancer Center. "What we hope to determine is the safe and optimal dose of drug in the brain."

Dexanabinol is a cannabinoid derivative that causes no psychotropic effects. It was tested previously as a neuroprotective in patients with traumatic brain injury. During these trials the drug was found to cross the blood-brain barrier. More recently, researchers at e-Therapeutics plc, who are supporting the current trial, showed that dexanabinol kills cultured cancer cells derived from many tumor types. Additional research in Kesari's lab demonstrated the drug's anti-cancer effects in patient-derived brain cancer cell lines.

Dexanabinol's potential in fighting cancer was identified through a new approach to drug discovery called network pharmacology, a way to analyze the network of proteins underlying a disease process. Network pharmacology enables scientists to seek drugs from among existing

compounds, or design new molecules, that act simultaneously on a number of individual proteins to disrupt the cancer-related networks.

Kesari added that this trial fits well with a broader national effort to re-purpose existing drugs for the treatment of cancer. He asked, "Why not use drugs that are currently available and learn how they can be applied in new effective ways for different indications?"

Dexanabinol is thought to act on proteins including NFκB, TNFα, COX-2 HAT, FAT and cyclin-dependent kinases. The trial at UCSD Moores Cancer Center is one of two ongoing Phase I studies with dexanabinol, and the first to evaluate the drug in cancer patients.

"In time, we will explore the association between the molecular phenotype of the tumor and the patient's response, which may allow us to personalize future therapies," said Kesari, associate professor, Department of Neurosciences at UC San Diego School of Medicine.

Patients who are eligible for this trial must have failed prior therapy including surgical resection, radiation therapy and systemic therapy.

Provided by University of California - San Diego