# Toward an oral therapy for treating Alzheimer's disease: Using a cancer drug

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Currently, no cure exists for Alzheimer's disease, the devastating neurological disease affecting more than 5 million Americans. But scientists are now reporting new progress on a set of compounds, initially developed for cancer treatment, that shows promise as a potential oral therapy for Alzheimer's. Their study appears in ACS' *Journal of Medicinal Chemistry*.

Carlo Ballatore, Kurt R. Brunden and colleagues explain that in a healthy brain, the protein known as tau binds to and stabilizes microtubules, which are cellular components made of protein inside cells. Microtubules are critical for performing many processes in the cell, such as growth and division. In the brain, they are particularly important for transporting molecules or other "cargo," such as nutrients. But in people with Alzheimer's disease, tau doesn't bind well to microtubules and clumps up in the brain. That leaves microtubules in disarray. Scientists believe that this process leads to the mental problems associated with the disease, including memory loss, dementia and ultimately nerve cell death. The researchers have previously shown that when agents that can stabilize microtubules are given to mice with Alzheimer-like traits, their cognition has improved, and nerve cell loss is reduced. But the experimental compounds so far have not been good drug candidates mainly because they must be injected, which can be painful. The Ballatore and Brunden teams wanted to test a series of compounds, already identified as potential anti-fungal and anti-cancer agents, that patients might one day be able to take orally.

They gave the compounds to mice by mouth and found that the drugs reached the brain, took on the role of tau and stabilized microtubules in the animals' brains. This led the scientists to conclude that the molecules from these classes could be good oral therapy candidates for treating Alzheimer's and related disorders.

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