Commonly-prescribed drugs may influence the onset and progression of Alzheimer's disease

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Multiple drug classes commonly prescribed for common medical conditions are capable of influencing the onset and progression of Alzheimer's disease, according to researchers at The Mount Sinai Medical Center. The findings are published online in the journal *PLoS One*.

Led by Giulio Maria Pasinetti, MD, PhD, the Saunders Family Chair and Professor in Neurology at Mount Sinai, a research team used a computer algorithm to screen 1,600 commercially-available medications to assess their impact on the brain accumulation of beta-amyloid, a protein abnormally accumulated in the brain of Alzheimer's disease and implicated in neurodegeneration. They found that currently-available medications prescribed for conditions such as hypertension, depression, and insomnia were found to either to block or to enhance the accumulation of beta-amyloid, the component of amyloid plaques.

"This line of investigation will soon lead to the identification of common medications that might potentially trigger conditions associated with the prevention, or conversely the onset, of Alzheimer's disease," said Dr. Pasinetti. "They may be a novel reference for physicians to consider when prescribing the most appropriate drug, particularly in subjects at high risk for Alzheimer's disease."

To validate the screening protocol, Dr. Pasinetti and his colleagues

administered these drugs in mice that were genetically engineered to develop the hallmark amyloid plaques associated with Alzheimer's disease. After six months of treatment with blood pressure medicines, amyloid plaques and neurodegeneration were significantly reduced in the mice. One such medicine was Carvedilol, now under clinical investigation in Alzheimer 's disease with the intent to slow down memory deterioration.

"In recent years, amyloid plaques have become one of the main focal points in the search to understand and to treat Alzheimer's disease," said Dr. Pasinetti. "Thus, identifying novel drug treatments that prevent harmful beta-amyloid generation will help in the development of treatments for Alzheimer's disease. For example, one very exciting finding of our study is that Carvedilol, already approved for treatment of hypertension, may immediately become a promising drug for the treatment of Alzheimer's as well."

The authors discuss the limitations of the research, noting that studies must be immediately verified in human-safety studies that examine the effects of the drugs independent of the original indication. Dr. Pasinetti hopes these findings will lead to multiple clinical trials in the future to identify preventive drugs, which will need to be prescribed at tolerable dosages.

"If we can repurpose drugs currently used for different indications, such as lowering blood pressure, this could have dramatic implications for this population," said Dr. Pasinetti.

Provided by The Mount Sinai Hospital

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