

Coffee Compounds Join Forces to Fight Parkinson's

By IFT NEXT



Parkinson's disease and Lewy body dementia—two progressive and currently incurable diseases—may soon receive a one-two punch, thanks to the caffeine in coffee along with another compound found in the waxy coating of coffee beans.

Rutgers University scientists, who detailed their discovery in a study published in the *Proceedings of the National Academy of Sciences*, believe the combination of the two compounds has the potential to become a therapeutic option to slow brain degeneration. Lead author M. Maral Mouradian, director of the Rutgers Robert Wood Johnson Medical School Institute for Neurological Therapeutics, says the research began by examining “a protein called alpha-synuclein, which accumulates as abnormal aggregates in the brains of people with Parkinson's disease (PD) and Dementia with Lewy Bodies (DLB).”

The form that aggregates, explains Mouradian, is modified by a process called phosphorylation, which adds a phosphate group to the protein. “This addition,” she says, “accelerates the tendency of alpha-synuclein to mis-fold and aggregate. Therefore, our goal has been to minimize the degree of alpha-synuclein phosphorylation.” Mouradian and her fellow researchers focused on the catalyst (enzyme) that removes the phosphate group (phosphatase) and identified the specific isoform (form) of protein phosphatase 2A (PP2A).

“Through a series of studies,” she says, “we found a compound in coffee, called EHT (eicosanoyl-5-hydroxytryptamide) that enhances the activity of PP2A. The reason we looked at coffee is because of epidemiological data showing reduced risk of developing PD among people who consume coffee. We showed that EHT indeed protects the brain in mouse models of PD and DLB. In the present study, we wanted to find out if there is synergy between EHT and caffeine (which had been presumed to be the protective agent in coffee).”

To confirm the synergistic relationship, the scientists administered low doses of the two compounds to mice, both separately and in combination. Individually, no clear benefit was noted from either compound in sub-therapeutic doses. However, says Mouradian, “the combination protected the brain in two models of PD and DLB, one in which the protein is overexpressed throughout the brain, and the other involving the injection of pathologic fibrils of alpha-

synuclein in a brain region and following the spread of that pathology to other brain regions, a process known as propagation. We also showed the same effect in simple cell model experiments and showed that the effect was through enhancing PP2A activity.”

The study results indicate that caffeine is not the only protective agent in coffee and that EHT provides consistent beneficial effects in the models. Mouradian notes that EHT is found in a variety of coffee types in varying amounts and that “caffeine does not need to be consumed in large amounts for it to protect the brain in PD so long as it is taken in combination with EHT. This can minimize the negative health consequences of consuming too much caffeine.”