Compounds in Green Tea, Chocolate, Red Wine Show Promise for HIV Neuro Problems

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A group of plant polyphenols known as catechins—found in green tea, dark chocolate and red wine—may help prevent the neurological complications more common among people living with HIV, according to a paper published online by the Journal of NeuroVirology and summarized by the publisher in a news announcement.

Under the direction of Joseph Steiner, MD, of the Johns Hopkins University department of neurology in Baltimore, the authors found that catechins—notably epicatechin and epigallocatechin gallate (EGCG)—can induce the production of a protein called brain-derived neurotrophic factor (BDNF) that neurons need in order to function correctly.

Ongoing research, including work conducted at Georgetown University Medical Center that was reported last month in the Journal of Neuroscience, confirms that people living with HIV may be more susceptible to neurocognitive impairment and depression because they have lower levels of BDNF in their brains compared with those not living with the virus.

These findings have paved the way for a number of therapeutic possibilities. One is the study of compounds that can induce the production of BDNF in the brain.

Steiner and his colleagues began by analyzing the effects of roughly 2,000 compounds—including organic substances and U.S. Food and Drug Administration–approved drugs—on neurons in the laboratory. Nine of the tested compounds were related to epicatechin, which is found in cocoa tree seeds and green tea leaves. Further screening and comparison with resveratrol, the antioxidant found in red wine, identified epicatechin and EGCG as being the most effective at helping protect neurons by inducing production of BDNF.

Although the antioxidant activities of epicatechin and EGCG are well documented, the Journal of NeuroVirology publisher notes in its news announcement, “the discovery that they could be responsible for inducing production of BDNF is an exciting advancement in this area. The fact that these compounds readily cross the blood-brain barrier further increases their therapeutic potential, as this is often a major stumbling block in the development of therapies directed at the brain. This provides hope for patients with HIV as there is currently no neuroprotective therapy

available for patients with HIV-associated cognitive impairment.”

Steiner and his colleagues conclude: “Due to its simpler structure and more efficient blood-brain barrier penetration properties, epicatechin might be the best therapeutic candidate for neurodegenerative diseases. These include HIV-associated cognitive disorders where oxidative stress is an important pathophysiological mechanism.”

They add that more research is required to explore just how well these naturally occurring compounds can prevent and reverse neurocognitive problems in people living with HIV.

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