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Red wine polyphenols help prevent brain damage in rat model of stroke

The March 1, 2008 issue of the Journal of Nutrition published the finding French and Swiss researchers that giving red wine polyphenol compounds to rats helped prevent neurologic damage following induced ischemic cerebral stroke.

Seven male rats were given 30 milligrams per kilogram daily of a wine polyphenol extract containing proanthocyanidins, anthocyanins, catechin, hydroxycinnamic acids, flavonols, and tannins (but no alcohol) dissolved in their drinking water for one week, while a control group received unenhanced drinking water. Middle cerebral artery occlusion was conducted under anesthesia to mimic human embolic stroke, followed by reperfusion (restoration of blood flow). Five rats received sham operations. Intracerebral microdialysis monitored the release of amino acid and energy metabolites that normally follows stroke. The investigators found that treatment with red wine polyphenols completely prevented the ischemia-induced burst of damaging excitatory amino acids that occurred in the untreated rats. Residual cerebral blood flow was enhanced during occlusion as well as during reperfusion in the polyphenol-treated group, due to a significantly larger interior diameter of several arteries, which suggested an outward remodeling of the blood vessels. Twenty-four hours after blood flow was restored, infarcted (damaged) lesions were observed in just two of the seven animals receiving polyphenols, and were much smaller than those observed in the control group. In the other five rats in this group, only edema was observed.

"Altogether, red wine polyphenol compounds, by reducing disorder of cerebral blood flow, may prevent stroke and may establish early reperfusion during the acute phase of stroke, reducing the magnitude and the extent of tissue injury," the authors write. "These data provide an experimental basis for the beneficial effects of red wine polyphenol compounds for stroke protection either as prevention or treatment of the different phases of the disease," they conclude.

—D Dye