

## Green Tea May Help to Protect the Brain

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Green tea may help protect the brain during sleep apnea

The May 15, 2008 issue of the American Journal of Respiratory and Critical Care Medicine published the discovery of researchers at the University of Louisville in Kentucky that the antioxidant property of green tea could help prevent the cognitive deficits associated with obstructive sleep apnea (OSA). Sleep apnea occurs when breathing is periodically interrupted during sleep, temporarily depriving the brain of oxygen. When caused by airway collapse or blockage which obstructs breathing during sleep, the condition is known as obstructive sleep apnea. Sleep apnea is associated with architectural changes in brain areas involved with memory and learning, and with neurocognitive deficits that are believed to be caused in part by increased oxidative stress.

University of Louisville Kosair Children's Hospital Research Institute director David Gozal, MD and his associates intermittently deprived 106 male rats of oxygen during twelve hour cycles, a treatment which has been shown to result in the increased oxidative stress and cognitive deficits observed in human sleep apnea. A control group of animals received regular room air. Green tea catechin polyphenol extract was added to the drinking water of half of the oxygen-deprived rats for a 14 day period. Water maze testing was conducted to evaluate spatial learning and memory, and brain tissue was analyzed for markers of oxidative stress and inflammation.

Oxygen-deprived rats that received green tea polyphenols performed significantly better on the water maze test than those that received plain drinking water. While the oxidative stress marker malondialdehyde doubled in untreated rats that underwent oxygen deprivation compared to control rats, a 40 percent reduction in malondialdehyde was observed in animals that received tea polyphenols.

"A growing body of evidence suggests that the adverse neurobehavioral consequences imposed by intermittent hypoxia (IH) stem, at least in part, from oxidative stress and inflammatory signaling cascades," Dr Gozal writes.

"Because oxidative processes underlie neurocognitive deficits associated with intermittent hypoxia, the potential therapeutic role of green tea polyphenols in sleep-disordered breathing deserves further exploration," the authors conclude.

