

# Coffee's aroma kick-starts genes in the brain

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Scientists report that the simple inhalation of coffee by rats has changed their gene expressions in ways that help reduce sleep deprivation-induced stress. Courtesy of public-domain-photos.com

Drink coffee to send a wake-up call to the brain? Or just smell its rich, warm aroma? An international group of scientists is reporting some of the first evidence that simply inhaling coffee aroma alters the activity of genes in the brain.

In experiments with laboratory rats, they found that coffee aroma orchestrates the expression of more than a dozen genes and some changes in protein expressions, in ways that help reduce the stress of sleep deprivation. Their study is scheduled for the June 25 issue of ACS' *Journal of Agricultural and Food Chemistry*.

Han-Seok Seo and colleagues point out that hundreds of studies have

been done on the ingredients in coffee, including substances linked to beneficial health effects. "There are few studies that deal with the beneficial effects of coffee aroma," they note. "This study is the first effort to elucidate the effects of coffee bean aroma on the sleep deprivation-induced stress in the rat brain."

In an effort to begin filling that gap, they allowed lab rats to inhale coffee aroma, including some rats stressed by sleep deprivation. The study then compared gene and protein expressions in the rats' brains. Rats that sniffed coffee showed different levels of activity in 17 genes.

Thirteen of the genes showed differential mRNA expression between the stress group and the stress with coffee group, including proteins with healthful antioxidant activity known to protect nerve cells from stress-related damage.

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