

## Not so controversial anymore -- panel says moderate coffee drinking reduces many risks

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Although the American Society for Nutrition's popular "controversy session" at Experimental Biology 2007 focuses on the health effects of coffee drinking, panel chair Dr. James Coughlin, a toxicology/safety consultant at Coughlin & Associates, says that recent advances in epidemiologic and experimental knowledge have transformed many of the negative health myths about coffee drinking into validated health benefits.

Indeed, panel co-chair Dan Steffen, who follows coffee and health issues in the Scientific and Regulatory Affairs group of Kraft Foods, note that the "controversy" is often to educate a wider audience about this transformation in understanding.

Coffee is among the most widely consumed beverages in the world, and

Dr. Coughlin says that the preponderance of scientific evidence - some by the panelists - suggests that moderate coffee consumption (3-5 cups per day) may be associated with reduced risk of certain disease conditions, such as Parkinson's disease. Some research in neuropharmacology suggests that one cup of coffee can halve the risk of Parkinson's disease. Other studies have found it reduces the risk of Alzheimer's disease, kidney stones, gallstones, depression and even suicide.

Dr. Coughlin and two distinguished researchers discussed some of the benefits - and a couple of the remaining increased risk factors (possible increase in blood pressure and plasma homocysteine) - on April 30 at the Experimental Biology meeting in Washington, DC.

Dr. Rob van Dam, an epidemiologist at the Harvard School of Public Health and the Harvard Medical School, studies the link between diet and the development of type 2 diabetes. Worldwide, an estimated 171 million persons have diabetes, mostly type 2 diabetes, and an alarming increase to 366 million persons is expected for the year 2030. While increased physical activity and restriction of energy intake can substantially reduce risk of type 2 diabetes, he believes insight into the role of other lifestyle factors may contribute to additional prevention strategies for type 2 diabetes.

In recent epidemiological studies in the U.S., Europe and Japan, persons who were heavy coffee consumers had a lower risk of type 2 diabetes than persons who consumed little coffee. Interestingly, he says, associations were similar for caffeinated and decaffeinated coffee, suggesting that coffee components other than caffeine may be beneficial for glucose metabolism.

Coffee contains hundreds of components including substantial amounts of chlorogenic acid, caffeine, magnesium, potassium, vitamin B3,

trigonelline, and lignans. Limited evidence suggests that coffee may improve glucose metabolism by reducing the rate of intestinal glucose absorption and by stimulating the secretion of the gut hormone glucagon-like peptide-1 (GLP-1) that is beneficial for the secretion of insulin. However, most mechanistic research on coffee and glucose metabolism has been done in animals and in lab tubes and therefore metabolic studies in humans are currently being conducted. Further research may lead to the development or selection of coffee types with improved health effects.

Dr. Lenore Arab, a nutritional epidemiologist in the David Geffen School of Medicine at UCLA, notes that the first coffee controversy dates back 430 years when in 1570 some monks petitioned the pope to condemn this drink, so popular among Muslims. Pope Clement VIII, liking how it kept the monks from falling sleep during mass, purportedly blessed it instead. The rest, including the United States' wholesale conversion to coffee following the Boston Tea Party, is history.

In reviewing the latest epidemiologic literature on cancers and coffee, Dr. Arab has found there to be close to 400 studies of the associations between coffee consumption and cancers various at various sites. The earlier controversy with regard to colon cancer was based on flawed analyses, she says. More thorough analyses and the accumulation of evidence suggest no negative effect on the incidence of colon cancer, and possible protective effects for adenomas of the colon as well as for rectal cancer and liver cancer. Mechanisms which might contribute to a possible anticarcinogenic effect include reduction in cholesterol, bile acid and neutral sterol secretion in the colon, increased colonic motility and reduced exposure of epithelium to carcinogens, the ability of diterpenes to reduce genotoxicity of carcinogens, and lower DNA adduct formation, and the ability of caffeic acid and chlorogenic acid to decreased DNA methylation.

In other cancers - breast, ovarian, and prostate - the evidence is not suggestive of either risk or protection. There are two areas, says Dr. Arab, in which there is some evidence of increased risk: leukemia and stomach cancer. The evidence for the former is intriguing, for the latter insubstantial. She concludes that a systematic review of the newer data for liver, rectal, stomach cancer and for childhood leukemia is due.

Source: Federation of American Societies for Experimental Biology

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