

## Feeling Anxious or Distracted? New Research Shows a Cup of Tea Could Help

New Findings Show How Tea Impacts Brain Waves  
Other Research Links Drinking Tea to Weight Management and Reduced Risk of  
Heart Disease, Certain Cancers & Diabetes

WASHINGTON, Sept. 18 /PRNewswire/ -- Leading scientists from around the world convened today in Washington, DC for the Fourth International Scientific Symposium on Tea & Human Health to review the latest findings on the potential health benefits of tea, including studies on how it may help maintain a healthy body weight, control blood sugar and even help us think more clearly. New studies adding to the body of knowledge regarding the comfort beverage's potential ability to reduce risk for several chronic diseases, such as heart disease and certain cancers were also presented.

### Tea Theanine Link to Attention and Focus

The results of several ongoing human trials presented by John Foxe, Ph.D., Professor of Neuroscience, Biology and Psychology at City College of the City University of New York, have found that theanine from tea actively alters the attention networks of the brain. Theanine is an amino acid present almost exclusively in the tea plant. After drinking tea, the amino acid theanine, which is present in Green, Black and Oolong varieties, is known to be absorbed by the small intestine and cross the blood-brain barrier where it affects the brain's neurotransmitters, and increases alpha brain-wave activity. This alpha brain rhythm is known to induce a calmer, yet more alert, state of mind.

Dr. Foxe and his team used electrophysiological measures to monitor brain activity after individuals drank solutions containing either 250 mg theanine or placebo. The subjects were asked to complete a variety of attention-related computerized tasks. "Our results showed that after having theanine, individuals showed significant improvements in tests for attention and that activity in cortical regions responsible for attention functions was enhanced," said Dr. Foxe.

New research in Dr. Foxe's laboratory, the Cognitive Neurophysiology Laboratory at the Nathan S. Kline Institute for Psychiatric Research in Orangeburg, New York, suggests that the effects of theanine in combination with caffeine are even greater than with either one alone in improving attention. Theanine may work synergistically with caffeine to help induce a more calming, relaxed state, but one that allows the mind to focus and concentrate better at tasks. A cup of tea contains an average of 20-25 mg of theanine.

"What's more, we have seen that just 20 minutes after consuming theanine, the blood concentrations increase and the brain's alpha waves are impacted. It lasts about three to four hours, which we have speculated may be why people tend to drink a cup of tea every three-to-four hours during the day," added Dr. Foxe.

### Tea May Help Maintain Brain Health

Numerous studies have concluded that diets rich in fruits and vegetables support the body in fighting neurological decline through antioxidant mechanisms associated with their high flavonoid content. However, the importance of polyphenolic flavonoids in supporting healthy brain cells appears to go beyond the simple oxygen species scavenging, involving pleiotropic effects on numerous biological pathways to help keep human brain cells from dying and even help repair them when they are

subjected to insults that damage the cells' DNA.

Human epidemiological and new animal data from around the world suggest that drinking tea, especially rich in catechins, may help support the brain as we age. Indeed, tea consumption is inversely correlated with the incidence of dementia, Alzheimer's disease and Parkinson's disease, which may help to explain why there are significantly lower incidence rates of age-related neurological disorders among Asians than in Europeans or Americans.

Dr. Silvia Mandel, of the Eve Topf Center for Neurodegenerative Diseases in Israel, has been studying the effects of tea on brain functions in laboratory and animal models for over a decade. Her most recent studies, presented at the symposium, looked at animal models of neurological diseases such as Parkinson's and Alzheimer's. Her group provided an amount of purified EGCG equal to about two to four cups of Green Tea per day to animals with induced Parkinsonism as part of their diet to evaluate how their symptoms improved or progressed. They found that when the animals are fed Green Tea EGCG, the polyphenol appeared to prevent brain cells from dying, and showed improvements in reducing compounds that lead to lesions in the brains of animals with Alzheimer's disease.

According to Dr. Mandel, "not only may the EGCG help prevent brain cells from dying, it appears that the polyphenol may even rescue the neurons once they have been damaged, to help them repair. In the past, it was thought that once brain cells were damaged, there was no way to repair them. The major question is whether these promising results are reproducible in humans."

#### Further Evidence that Tea Promotes Good Health

The latest data provide further evidence of tea's role in helping individuals maintain good health and vitality. Research scientists from top medical institutions in Asia, the Middle East, Europe and North America gathered to share their new data.

Some of the other exciting findings presented at the Fourth International Scientific Symposium on Tea & Human Health relevant to public health were:

- Tea flavonoids may improve cardiovascular health by reducing inflammation and improving blood vessel function;
- Tea drinking may play a role in gene expression that is involved in cancer cells;
- Tea may play a role in shifting metabolism to favor weight loss and better manage blood sugar levels;
- Tea is a major contributor of flavonoids in the US diet.

The symposium, which was sponsored by the American Cancer Society, American College of Nutrition, American Medical Women's Association, American Society for Nutrition, The Linus Pauling Institute and the Tea Council of the U.S.A., was held at the United States Department of Agriculture (USDA). Leading researchers from around the world joined American scientists in presenting the latest clinical, laboratory and epidemiological data on the role of tea in promoting healthfulness and reducing the risk of disease.

"The list of health benefits associated with tea consumption continues to grow. And, unlike medications, there are no known medical reasons not to enjoy tea as part of a healthy diet and lifestyle," said meeting co-chair, Jeffrey Blumberg, Ph.D., Professor, Friedman School of Nutrition Science and Policy and Director, Antioxidants Research Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston.

"The scientific community around the world is making tremendous advancements in better understanding the mechanisms by which tea may reduce risk for heart disease, certain cancers, type II diabetes, and help maintain neurological function. Researchers are finding out exactly how bioactive compounds in tea exert their positive effects on human health," commented co-chair Lenore Arab, Ph.D., Professor of Internal Medicine at the University of California, Los Angeles.

#### New Findings About Tea and Weight Management

With over two-thirds of the U.S. adult population overweight or obese, scientists are looking for medically sound ways to help consumers manage their weight. One area of intense research is Green Tea and tea catechin polyphenols specifically. To clarify the status of the research to date, Eva Kovacs, Ph.D., Clinical Research Manager at Unilever North America, reviewed the existing scientific literature on Green Tea, weight loss and metabolism. Dr. Kovacs reviewed several research studies conducted in recent years that suggest that Green Teas rich in catechins may aid in weight management by reducing body fat and in particular visceral fat, possibly through increased resting energy expenditure and fat oxidation. "A few studies have found modest benefits on metabolism from Green Tea extract, but more research is needed before recommending drinking Green Tea as a 'fat burner,'" said Dr. Kovacs.

Since Green and Black Tea can be enjoyed without added calories, tea drinkers may find that they can eliminate liquid calories in their diet by drinking tea in lieu of sugar-laden beverages that are nutrient-poor but calorie-rich. Dr. Kovacs warned consumers that Green Tea products are no magic bullet for weight loss and Green Tea should be included as part of an overall diet and exercise strategy to achieve a healthy body weight.

#### Studies Suggest Tea Consumption Tames Inflammation, Improves Blood Vessel

##### Function

New research presented by Claudio Ferri, M.D., Professor of Internal Medicine at the University of L'Aquila in Italy provided additional insights into how tea flavonoids provide support for cardiovascular health by promoting healthy endothelial function. In his studies, subjects were given either low, intermediate or high doses of tea flavonoids and then the researchers measure endothelial dysfunction via flow-mediated dilation of the brachial artery and arterial stiffness. "Our studies have found that tea flavonoids improved endothelium-dependent vasorelaxation and decrease arterial stiffness in study participants, thereby suggesting that tea consumption may have favorable effects on cardiovascular disease."

These new developments in artery endothelium research add to the growing body of evidence suggesting that drinking as little as two to four cups of tea daily can promote cardiovascular health in several different ways. Tea flavonoids are thought to support cardiovascular health through several mechanisms, including: providing antioxidants to help temper inflammatory markers such as C-reactive protein; reducing blood cholesterol levels; and providing dilation of blood vessels to help manage blood pressure.

#### Tea May Impact Genes Involved in Cancer Initiation and Development

Results from tea intervention trials on the role of Green Tea on the prevention of cancer provided insights into the cutting edge field of nutri-genomics, or how gene susceptibility toward chronic diseases can be altered through dietary interventions. Iman Hakim, M.D., Ph.D., M.P.H., Professor and Interim Dean of the Mel and Enid Zuckerman College of Public

Health and Professor at the Arizona Cancer Center, University of Arizona, has conducted several human clinical trials over the past decade on the role both Green and Black Tea may play in certain cancers. Her latest human clinical trial suggests that bioactive compounds in tea have a significant effect on genes that impact cancer susceptibility and repair from environmental insults.

"The good news is that we are seeing that Green Tea is impacting genes that play a role in cancer, but we cannot at this point pinpoint who will be responders versus non-responders," noted Dr. Hakim. "In addition, our recent preliminary data show a beneficial effect of Green Tea on lipid profile among smokers and former smokers. Therefore, since there is no known downside of consuming tea, and it may be beneficial, there's no reason not to recommend drinking it." Dr. Hakim's lab is currently analyzing the study data to determine if Black Tea has similar effects to Green. The amount of tea that Dr. Hakim recommends is at least four cups per day.

#### Tea Drinkers Consume Over 20 Times More Flavonoids

Flavonoids are a type of antioxidant that are known to be biologically active and are found primarily in plant-based foods and beverages, including fruits and vegetables, chocolate, wine and tea. Intake of flavonoids has been inversely associated with the incidence of many chronic diseases, including cardiovascular disease and certain cancers. While research is ongoing to fully understand the roles of flavonoids in human health, they are thought to exert their health benefits, in part, due to their antioxidant capacity.

Using the latest national food consumption databases and the USDA flavonoid Database, Michigan State University researchers were able to differentiate tea drinkers from non-tea drinkers and analyze their diets, based on diet recalls, for flavonoid intake. "We found that just over 21 percent of U.S. adults drank tea and that the total flavonoid intake of tea consumers was more than 20 times higher than flavonoid consumption of non-tea drinkers," explained lead researcher Won Song, Ph.D., R.D. Professor of Human Nutrition at Michigan State University.

Tea drinkers averaged nearly 700 mg flavonoids while non-tea drinkers averaged about 33 mg per day. A cup of tea contains approximately 125 mg flavonoids, which is more than most non-tea drinkers consume in an entire day.

#### A Glimpse at the Future of Tea and Health

It's not surprising to many researchers who study plant-based foods that ongoing scientific studies into the health benefits of drinking tea has led to a robust body of literature that is very promising. Plants are known to have potent bioactive compounds, which is why diets rich in plant-based foods are known to support the body's fight against many chronic conditions associated with aging. Research continues to show that tea contains bioactive compounds that have biological roles within human cells.

"The data presented at this year's symposium extends the apparent benefits of tea beyond reducing the risk for cardiovascular disease and cancer to new facets of health. Preliminary studies suggesting an effect of tea on neurological function, inflammation, and weight maintenance add to the robust science already demonstrating that tea is healthful beverage," said Dr. Blumberg. New results from nutrigenomic research should help identify those individuals who will benefit the most from drinking tea. Experimental and clinical studies like these are continuing to expand our

knowledge about tea and human health.

Press Contacts for the Tea Council of the USA, Inc.:

Kevin Hughes

Pollock Communications

646-277-8720

347-423-7559 (mobile)

khughes@pollock-pr.com

Barbara King

Pollock Communications

212-941-1414

bking@pollock-pr.com

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