

# Wake up and smell the coffee: Study finds that caffeine may help prevent MS

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A good cup of coffee might be just the wake-up call scientists need to stop multiple sclerosis.

A new study coauthored by Oklahoma Medical Research Foundation scientist Linda Thompson, Ph.D., found that mice immunized to develop an MS-like condition were protected from the disease by drinking caffeine. The research appears in the early online edition of the June 30, 2008 Proceedings of the National Academy of Sciences.

In the study, done in collaboration with Cornell University and Finland's University of Turku, researchers followed the progress of mice that normally developed an MS-like condition. The scientists discovered that when the rodents consumed the equivalent of six to eight cups of coffee a day, they did not develop the condition. The finding could lead to new

ways to prevent and treat MS, said Thompson.

According to Thompson, the caffeine stopped adenosine (one of the four building blocks in DNA) from binding to an adenosine receptor in mice. Adenosine is a common molecule in the human body and plays a vital part in the biochemical processes of sleep, suppression of arousal and energy transfer.

When adenosine could not bind to the receptor, this prevented certain T cells—white blood cells that play a central role in immune responses—from reaching the central nervous system and triggering the cascade of events that lead to experimental autoimmune encephalomyelitis, or EAE, the animal model for the human disease MS.

"This is an exciting and unexpected finding, and I think it could be important for the study of MS and other diseases," said Thompson, who holds the Putnam City Schools Distinguished Chair in Cancer Research at OMRF. In particular, she said, the research holds potential for lupus, rheumatoid arthritis and other autoimmune diseases—conditions in which the body uses the weapons of its immune system against itself.

While the results are heartening, Thompson said there is much more work to be done for the prevention of multiple sclerosis in humans. "A mouse is not a human being, so we can't be sure caffeine will have the same effect on people prone to develop MS without much more testing."

A retrospective study of people with MS to track their caffeine intake and the effects on the disease could be an important next step in the research process, said Thompson. "If you found a correlation between caffeine intake and reduced MS symptoms, that would point to further studies in humans."

MS is disorder of the central nervous system marked by weakness,

numbness, a loss of muscle coordination, and problems with vision, speech and bladder control. Believed to be an autoimmune disease in which the body's immune system attacks nerves in the brain and spinal cord, MS affects approximately 400,000 Americans and 2.5 million people worldwide.

Source: Oklahoma Medical Research Foundation

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