

Loss Of Sleep, Even For A Single Night, Increases Inflammation In The Body

ScienceDaily (Sep. 2, 2008) — Loss of sleep, even for a few short hours during the night, can prompt one's immune system to turn against healthy tissue and organs.

A new article in the September 15th issue of *Biological Psychiatry*, by the UCLA Cousins Center research team, reports that losing sleep for even part of one night can trigger the key cellular pathway that produces tissue-damaging inflammation. The findings suggest a good night's sleep can ease the risk of both heart disease and autoimmune disorders such as rheumatoid arthritis.

Specifically, the researchers measured the levels of nuclear factor (NF)- κ B, a transcription factor that serves a vital role in the body's inflammatory signaling, in healthy adults. These measurements were repeatedly assessed, including in the morning after baseline (or normal) sleep, after partial sleep deprivation (where the volunteers were awake from 11 pm to 3:00 am), and after recovery sleep. In the morning after sleep loss, they discovered that activation of (NF)- κ B signaling was significantly greater than after baseline or recovery sleep. It's important to note that they found this increase in inflammatory response in only the female subjects.

These data close an important gap in understanding the cellular mechanisms by which sleep loss enhances inflammatory biology in humans, with implications for understanding the association between sleep disturbance and risk of a wide spectrum of medical conditions including cardiovascular disease, arthritis, diabetes,

certain cancers, and obesity. John H. Krystal, M.D., Editor of Biological Psychiatry and affiliated with both Yale University School of Medicine and the VA Connecticut Healthcare System, comments: “The closer that we look at sleep, the more that we learn about the benefits of sleeping. In this case, Irwin and colleagues provide evidence that sleep deprivation is associated with enhancement of pro-inflammatory processes in the body.”

“Physical and psychological stress brought on in part by grinding work, school and social schedules is keeping millions of Americans up at night,” said Dr. Irwin, lead author and director of the Cousins Center for Psychoneuroimmunology at the Semel Institute. “America’s sleep habits are simply not healthy. Our findings suggest even modest sleep loss may play a role in common disorders that affect sweeping segments of the population.” In other words, sleep is vitally important to maintaining a healthy body. And as Dr. Krystal notes, “these findings provide a potential mechanistic avenue through which addressing sleep disturbance might improve health.”