

## Caffeine Buzz:

### How We Silence Our Brain's Signal for Rest

In a certain historic act of rebellion against escalating British taxes on tea, a group of disguised colonists dumped a large shipment of the stuff into the Boston harbor in 1774. Tea was out. And almost overnight drinking coffee became a symbol of American patriotism and freedom. Cup for cup, coffee has three times more caffeine than tea does. We showed the British!

Our founding fathers proceeded to draft their strategies to liberate a new nation – in coffeehouses. Member of the Continental Congress first read the Declaration of Independence aloud to the public at Merchant's Coffee House in Philadelphia. Little did they know that they were also establishing a tradition that would shape our lifestyles and identities in a profound way for centuries to come. Coffee, especially, has become an integral part of our culture and our selves. As David Letterman once said, "If it wasn't for coffee, I would have no discernible personality at all."

Caffeine, found in coffee, tea, many soft drinks, chocolate products, and a variety of medications, is our world's most popular drug. The National Coffee Association reports that 54 percent of the U.S. adult population drinks coffee daily, while an additional 25 percent of Americans drink coffee occasionally. We consume approximately four hundred cups of coffee per capita each year. Between 80 and 90 percent of us consume caffeine in one form or another every single day. And we are not alone. As an international commodity, coffee is second only to oil.

Particularly in the form of coffee, caffeine is the primary fuel for the vehicle of our personal drive. It is our traditional "leaded" gasoline. More popular than nicotine and alcohol, caffeine is deeply integrated into the fabric of modern life and readily accessible. Despite the fact that it is a fairly potent drug with complex properties and widespread influences on our biological and psychological functions, caffeine still remains completely unregulated. Given the broad and uncertain range of its medical implications, if caffeine were introduced as a new drug today, experts agree that it simply would not meet with FDA approval.

The period of active influence of a drug or chemical in the body is measured in terms of its half-life, the amount of time it takes the body to metabolize about one-half of the substance in our blood. The half-life of caffeine can vary from several hours to several days. For a nonsmoking adult the effects can last from about five to seven hours. Various medications, the use of oral-contraceptives, and pregnancy can significantly lengthen the half-life of caffeine. Grapefruit contains a substance called naringin, which also increases the half-life of caffeine. Cigarette

smoking reduces the half-life of caffeine to about three hours, probably contributing to smokers consuming more coffee than nonsmokers.

Though many argue that they drink coffee because they “love the taste,” it is more likely that caffeine is so popular today because it serves as a potent stimulant. It speeds up metabolism, raises blood pressure and heart rate, and accelerates breathing. It also can temporarily offset the effects of sleep and dream deprivation. Although sensitivity to caffeine varies widely, doses ranging from 250 to 750 mg (about two to seven cups of coffee) can result in restlessness, disturbed sleep, tension, and even cardiac arrhythmias.

Caffeine increases the release of adrenaline, which increases alertness and in sufficient quantities can cause varying degrees of a flight-or-fight reaction. Contrary to popular belief, caffeine does not literally provide us with extra energy; it primarily masks our experience of depletion. Adenosine is a natural by-product of the body’s burning of fuel, a kind of recyclable exhaust. As available energy supplies are used up, adenosine levels rise, reach a threshold, and trigger special receptors in the brain that signal the experience of sleepiness. When caffeine is ingested, it quickly binds with these same receptors, blocking their sensitivity to adenosine. Consequently, the message of exhaustion then does not reach the brain and body. Caffeine does not provide us with more fuel – it essentially damages our fuel gauge, misleading us into thinking we are not running on empty.

Recent studies have determined that caffeine also suppresses melatonin. Given the critical role of melatonin in maintaining general health and promoting sleep and dreams, we may need to seriously reconsider the cavalier attitude with which we regularly consume this potent drug. In neurotherapy practice, it is common of clients with overarousal issues, or various forms and symptoms of anxiety, to engage often as caffeine consumers – until they become aware of the high cost they were paying in inner peacefulness.