



# What Are Nootropics?

By Barbara Brody

Whether you're a college student hoping to ace your exams, a busy professional striving for a promotion, or an older adult concerned about dementia, the idea of popping a pill that boosts your brainpower might seem pretty appealing. So perhaps it's not surprising that the use of nootropics -- aka cognitive enhancers or smart drugs -- is on the rise. But do they work? And are they safe?

The term "nootropics" first referred to chemicals that met very specific criteria. But now it's used to refer to any natural or synthetic substance that may have a positive impact on mental skills. In general, nootropics fall into three general categories: dietary supplements, synthetic compounds, and prescription drugs.

While health experts generally agree that taking a prescription nootropic for an FDA-approved purpose (such as a stimulant medication if you have ADHD or donepezil if you have Alzheimer's) may be helpful, the use of any type of cognitive enhancer in healthy people is far more controversial.

## What Researchers Say

Barry Gordon, MD, PhD, director of the cognitive neurology/neuropsychology division at Johns Hopkins Medicine, says there's "no strong evidence" that any of the supplements now being sold for their supposed memory-boosting powers are helpful. "It's not clear that they work and not clear that they're safe," he says. He's also skeptical of the basic premise behind nootropics.

"The circuits that are involved in human cognition are very complicated and not fully understood," he says. "You can't just 'turn up the dial' that easily." He notes that people who believe their mental performance has increased thanks to nootropics are largely being influenced by a placebo effect. "If you're more confident and think you'll do better, you *will* do better."

Chris D'Adamo, PhD, director of research and education at the University of Maryland's Center for Integrative Medicine, has a different take. Like Gordon, he doesn't think nootropics will give you superhuman mental abilities, but he does believe they have the potential to offer some people an edge.

"Most people seeking to optimize cognitive function would be better off focusing on getting enough sleep, eating a nutrient-dense diet, and managing their stress," he says. But once you have those basics down, the right nootropics might serve as a bonus, helping you think more clearly and sharply or reduce your chances of cognitive decline as you age, he says.

## Types of Nootropics

Almost everyone uses a nootropic, whether they know it or not, says D'Adamo. He's talking about caffeine, and while it can have health risks if you overdo it, this natural stimulant has been shown to improve thinking skills. It doesn't simply make you feel more alert, says D'Adamo: Caffeine also gives you more access to several chemicals (neurotransmitters) in your brain such as acetylcholine, which helps with short-term memory and learning.

But most people interested in nootropics aren't sticking to coffee or tea. They're branching out to dietary supplements. Some, such as ginseng and ginkgo, have not held up to scientific scrutiny. Yet others -- including CDP-choline, L-theanine, creatine monohydrate, *Bacopa monnieri*, huperzine A, and vinpocetine -- may still hold promise.

Racetams, such as piracetam, are another type of nootropic. You can get these synthetic compounds over the counter in the U.S., but they're considered prescription drugs in some other countries. D'Adamo says these chemicals, which act on neurotransmitters including acetylcholine, have been studied in older adults who have a decline in thinking skills. He doesn't recommend them for most younger, healthy people.

Prescription nootropics largely consist of stimulants such as those in some ADHD medications. Although these work well for many people with ADHD, they are not recommended for others who simply want to improve their focus and attention. Many college students get these types of drugs illegally, and while they may seem to help in the short term, there are serious risks. Side effects may include insomnia, blurry vision, high blood pressure, a fast heart rate, circulation problems, and addiction.

Another type of prescription nootropic is modafinil (Provigil). It's FDA-approved to treat narcolepsy, sleep apnea, and shift work disorder, but some studies suggest that it may help with learning and memory in healthy people. Modafinil appears to be safer than other types of stimulants, but more research is needed.

## Most Promising Options

If you're considering trying nootropic supplements, you should talk it over with your doctor first. As with all supplements, you'll want your doctor to let you know about any health risks, like effects on any conditions you have or medications you take.

Keep in mind that although there are some studies on the topic, they tend to be small or limited to the impact on older adults. Also, everyone's brain chemistry is unique, so what works for one person might not for another, says D'Adamo. That said, these four types might have promise:

**L-theanine:** This supplement seems to enhance the mental effects of caffeine and counteract caffeine-induced jitteriness, D'Adamo says. Research has shown that combining caffeine and L-theanine may help you multitask better. The safest way to get this combo is by drinking pure green tea, which contains both caffeine and L-theanine, but it's also OK to combine your usual coffee or tea with an L-theanine supplement.

Don't take caffeine in pill or power form, as it's too easy to overdo it. Caffeine, in excess, can be toxic, causing a racing heartbeat and even leading to seizures or death. Just 1 teaspoon of pure caffeine powder could have as much caffeine as you'd get from 28 cups of coffee. The FDA, which has cracked down on makers of pure and highly concentrated caffeine products, notes that the difference between a safe amount and a toxic amount is very small.

**CDP-choline:** Often prescribed in Europe as a drug, CDP-choline has been shown to help memory -- at least in people who have dementia caused by vascular problems in the brain. There are no known side effects, so it's generally considered safe to try.

**Creatine monohydrate:** Frequently found in body-building supplements, creatine helps build muscle mass. But studies have also found that it may improve reasoning skills and short-term memory in healthy people. It increases levels of a molecule called ATP, which leads to more cellular energy, D'Adamo says. "I take it regularly just for energy. It's very safe."

***Bacopa monnieri*** : A traditional Indian (ayurvedic) herb, *Bacopa monnieri* -- also known as brahmi -- has been suggested by some to help the brain processes information faster. It causes the branches of nerve cells (dendrites) to grow, says D'Adamo. He says this process takes some time; expect to wait 4-6 weeks for results.

While combining several of these supplements might seem like a good idea -- and many formulas on the market that do just that -- D'Adamo doesn't recommend it because most of the combos haven't been well-studied. Instead, he suggests trying one or two for a few months, then taking a month off before going back on them or switching to others. His concern is that you can become tolerant to nootropics (including caffeine), which means you'll need more and more for them to work for you.

As with any dietary supplements, you should also keep in mind that the FDA doesn't closely regulate nootropic supplements the way it does prescription drugs. Look for reputable brands and trust your body: If you notice any side effects or don't see an improvement in the expected timeframe, it's wise to stop.

WebMD Feature | Reviewed by Melinda Ratini, DO, MS on July 24, 2019

Sources 

SOURCES:

*BMJ*: "The Billion Dollar Business of Being Smart."

Chris D'Adamo, PhD, director of research and education, Center for Integrative Medicine, University of Maryland School of Medicine.

*Cochrane Database of Systemic Reviews*: "Cytidinediphosphocholine (CDP-choline) for Cognitive and Behavioural Disturbances Associated With Chronic Cerebral Disorders in the Elderly," "Huperzine A for Mild Cognitive Impairment," "Vinpocetine for Cognitive Impairment and Dementia."

*European Neuropsychopharmacology*: "Modafinil for Cognitive Neuroenhancement in Healthy Non-Sleep-Deprived Subjects: A Systematic Review."

*Evidence-Based Complementary and Alternative Medicine*: "Establishing Natural Nootropics: Recent Molecular Enhancement Influenced by Natural Nootropic."

*Experimental Gerontology*: "Effects of Creatine Supplementation on Cognitive Function of Healthy Individuals: A Systematic Review of Randomized Controlled Trials."

Barry Gordon, MD, PhD, director, Cognitive Neurology/Neuropsychology Division, Johns Hopkins Medicine.

*Harvard Business Review*: "Like It or Not, Smart Drugs Are Coming to the Office."

*Journal of Ethnopharmacology*: "Meta-Analysis of Randomized Controlled Trials on Cognitive Effects of Bacopa Monnieri Extract."

National Center for Health Research: "'Study Drug' Abuse by College Students: What You Need to Know."

*Nutritional Neuroscience*: "The Combined Effects of L-theanine and Caffeine on Cognitive Performance and Mood."

FDA: "Spilling the Beans: How Much Caffeine is Too Much?" "Pure and Highly Concentrated Caffeine."

© 2019 WebMD, LLC. All rights reserved.