

THE EFFECTS OF ALCOHOL ON THE BRAIN

health & wellness

By Nisha Jackson, PhD, MS, NP, HHP



We hear many different things about how alcohol affects the brain and body, most notably that it is a depressant, but that's only part of the story. It is a depressant, but weirdly enough, it's also an indirect stimulant. It plays a few other roles that might surprise you. Alcohol directly affects brain chemistry by altering levels of neurotransmitters—the chemical messengers that transmit the signals throughout the body that control thought processes, behavior, and emotion. Alcohol affects both excitatory and inhibitory neurotransmitters.

An example of an excitatory neurotransmitter is glutamate, which would normally increase brain activity and energy levels. Alcohol suppresses the release of glutamate, resulting in a slowdown along your brain's highways. An example of an inhibitory neurotransmitter is GABA, which reduces energy levels and calms everything down. Drugs like Xanax and Valium (and other benzodiazepines) increase GABA production in the brain, resulting in sedation. Alcohol also has a unique effect on GABA, and it's one that ties in directly to the unhealthy ways we often deal with stress.

With stress comes some level of anxiety, which, as many of us know all too well, alcohol easily manages. Alcohol increases the effects of GABA in the brain, creating a sense of calmness. What this means for you is that your thoughts, speech, and movements are slowed down, and the more you drink, the more of these effects you'll feel. But here's the twist: alcohol also increases the release of dopamine in your brain's reward center. The reward center is the same combination of brain areas (the ventral striatum) that are affected by virtually all pleasurable activity, including everything from hanging out with friends to getting a big bonus at work or even having sex. By jacking up dopamine levels in your brain, alcohol tricks you into thinking that it's making you feel great (or maybe just better if you are drinking to get over something emotionally difficult). The effect is that you keep drinking to get your brain to release more dopamine, but at the same time you're altering other brain chemicals that are enhancing your feelings of depression.

Over time, with more drinking, the dopamine effect diminishes until it's almost nonexistent. But at this stage, a drinker is often hooked on the feeling of dopamine release in the reward center, even though they're no longer getting it. Once a compulsive need to go back again and again for that release is established, addiction takes hold. The length of time it takes for this to happen is case-specific. Some people have a genetic propensity for alcoholism, and for them it will take very little time, while for others it may take several weeks, months, or even years.

I understand the joys of social drinking and how difficult it can be not to have a drink to wind down. But we have to keep our brain in balance, and moderation will help with this. It also helps make sure you are constantly balanced with other neurotransmitters in the brain, gut, and body. Even taking an amino acid supplement to support serotonin if you do drink socially will help with the balance of serotonin and dopamine and help keep you more in control. You can speak with a OnePeak Medical provider regarding proper supplementation (www.onepeakmedical.com).

Again, our focus should be on protecting our brain; a precious, valuable, and irreplaceable organ! Keeping our brain chemicals in check and the neurotransmitters balanced is the goal for optimal concentration, memory, mood, and focus.

Nisha Jackson PhD, MS, NP, HHP

Founder of OnePeak Medical Clinics & BRAND(X) Supplements

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Nisha Jackson
PhD, MS, NP, HHP
Founder and CEO of One Peak Medical

Kari Rocco
MS, FNP-C

Heather Cook
MSN, FNP-BC

one peak MEDICAL

98 E. 11th Avenue, Eugene, Oregon
www.onepeakmedical.com

For a consult, call: 541-204-4745
or email: eugene@onepeakmedical.com