

# Methamphetamine research paper



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The powerful and dangerous drug, methamphetamine (meth), has recently attracted more and more users around the world. It is an amphetamine drug that is very addictive. Meth users are gaining easier access to the drug, since it can be made from common household things, like Drano and battery acid. Over 400, 000 Americans are currently addicted to the drug. Meth causes a huge increase in dopamine and other neurotransmitters in the brain. In addition, meth also blocks enzymes that work to break down dopamine in the brain, which causes the high to last much longer than a high from a stimulant like cocaine.

Several methods are used to take this drug, but smoking it has recently become more popular. Smoking meth causes the body to absorb the drug quicker and leads to faster addiction. Meth destroys dopamine receptors, and after using it repeatedly, the brain's supply of dopamine starts to permanently decrease. Meth addicts develop a lot of physical and mental damage, and there is not currently a treatment to help. Once methamphetamine is ingested, the drug goes to the circulatory system, then instantly to the central nervous system.

The drug is an amphetamine, so it increases the release of dopamine from the presynaptic terminal. Instead of dopamine being reabsorbed by the terminal, meth causes it to release more dopamine. Meth also blocks the reuptake of dopamine and other neurotransmitters, another way of increasing the amount of dopamine in the synaptic cleft. Also, meth blocks COMT, the enzyme that normally breaks down dopamine. Because of this, meth highs last for hours longer than other stimulants and amphetamines.

After repeated use of meth, the brain's dopamine receptors decrease as the drug destroys them.

This damage can be permanent and causes the brain to reorganize and change. Because of the decrease in dopamine receptors, meth users start needing more and more of the drug, in order to feel what they originally did when they started using. Tolerance continues to build up as the user continues to take meth. Once someone is addicted to meth, using the drug is the only thing that stimulates the nucleus accumbens. Meth users can stay awake for days at a time, without wanting food, water, sex, etc.

These natural things that create pleasure and release dopamine in a normal person won't have the same effect, or any effect, on a meth addict. This makes it hard for addicts to overcome the addiction because they physically won't enjoy life if they don't take the drug. In addition, withdrawal symptoms of meth are similar to those of other addictive drugs. A lot of users fear withdrawal, and therefore continue to take the drug. Meth is incredibly bad for the brain, as well as the entire body. The dangerous chemicals used to make the drug do serious damage to users.

Because of reduced dopamine levels, addicts can develop Parkinson's disease or Schizophrenia. Also, meth causes increased heart rate, raises blood pressure, and damages blood vessels, making users susceptible to heart problems, strokes, and death. Many neuroscience research methods could be useful in studying meth addiction. To research the brain activity of meth addicts when exposed to pictures/other stimulus, an EEG could be conducted on addicts. Showing pictures of natural things that release

dopamine, such as food, sex, etc. versus showing pictures of drugs and meth, then comparing the brain activity, would be an effective study.

This would show the physical effects of using meth and how addicts are not stimulated by anything but the drug. Also, brain damage resulting from meth use could be studied by recording brain activity during behavior methods. Comparing the brain activity and behaviors of addicts to non-addicts could be interesting and helpful research. Using a variety of neuroscience research methods can definitely help scientists gain information about addictive drugs like meth and maybe lead to treatments in the future.