

The following is supplementary material to my recent article about System of a Down's 2001 song "Toxicity". I wanted to have a piece debunking myths surrounding ADHD medication to better drive home my main criticism with the common interpretation of the song, but it ended up getting really long-winded, so I cut it. So it's here now.

DISCLAIMER: I AM NOT A DOCTOR. THIS PORTION OF THE ARTICLE IS NOT MEDICAL ADVICE. THE INFORMATION HERE IS INCREDIBLY SIMPLIFIED FOR THE CONSUMPTION OF THE AVERAGE PERSON. PLEASE TALK TO YOUR DOCTOR BEFORE MAKING ANY DECISIONS REGARDING THE CONSUMPTION OF A SUBSTANCE. THANK YOU.

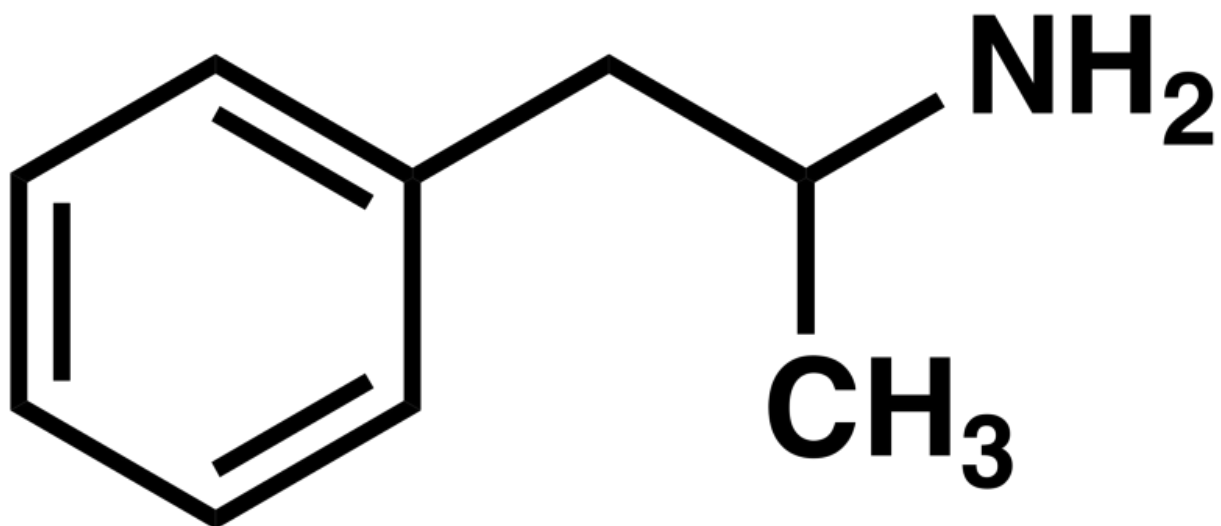
PLEASE DON'T TAKE METH, KIDS.

...ADULTS.

ahem.

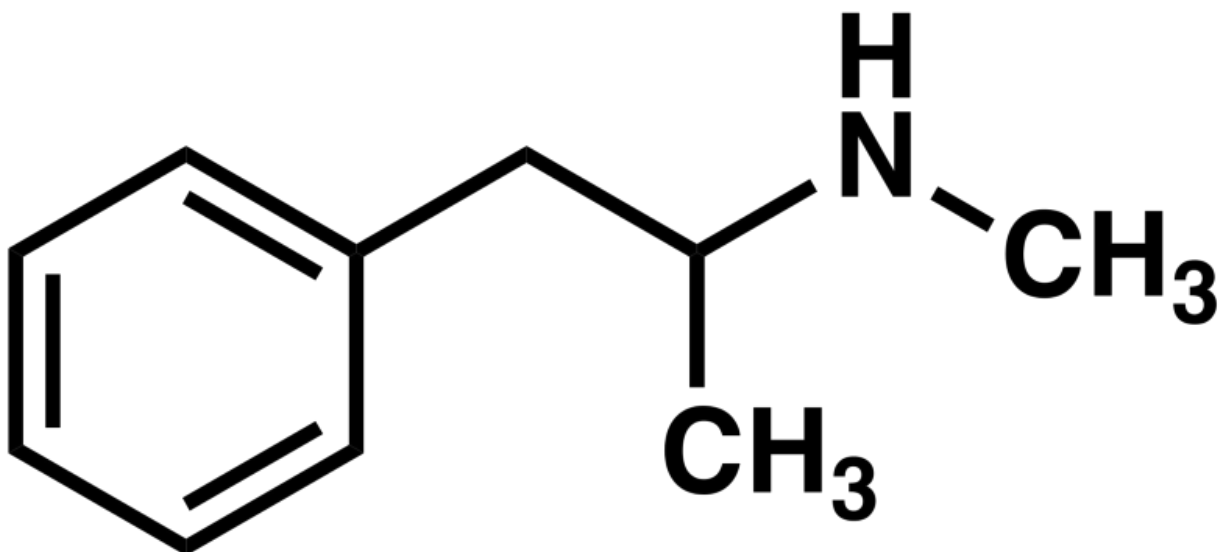
Adderall is comprised of various amphetamine salts, each containing a different enantiomer of the chemical. ("Enantiomer" is a fancy way of saying "one way that the molecules of a chemical can form", as the formation of the molecules in a chemical can have drastic effects on how it's absorbed by the body. But moving on.)

What separates amphetamine, a (comparatively) mild, (comparatively) safe amphetamine, from METHamphetamine, which I could only describe as "kerosene but for your brain", is the presence of a second methyl group. Below is racemic amphetamine. It contains a carbon ring connected to a methyl group (CH₃) and an amino group (NH₂.)



Amphetamine is the basis for a whole whack of different chemicals! Including MDMA, and methamphetamine. But also things like pseudoephedrine, commonly used in nasal drops for congestion!

What makes meth meth is... well, another meth...yl group.



In methamphetamine, a hydrogen atom is knocked off the amino group and replaced with a carbon, which itself comprises a second methyl group.

What does this mean? Well, primarily, methamphetamine is more lipophilic, meaning it can cross a border of cells called the blood-brain barrier WAY easier than other amphetamines.

To get an idea of what this looks like, take a piece of plastic wrap and put it over top of a bowl. Put some water on top of it, and then poke it with a pin. That's our basis. The plastic is the blood-brain barrier, and the pinhole is the purely-metaphorical size of the entryway that's made by amphetamine.

Now stab the plastic wrap with a knife.

That's how easily methamphetamine gets in.

So more of the chemical actually makes it to your brain, and while it's there, it's more resistant to being destroyed by the compounds inside, so it lasts way longer.

So while websites claim that amphetamine is "chemically similar" to methamphetamine, it's a bit like saying that water is "chemically similar" to coffee. It's not technically incorrect, but there's more to it than that, and there's a good reason you don't drink coffee to hydrate yourself.

...I mean if I wanted to get really pedantic, it's more like comparing water to hydrogen peroxide but hey this was an article about System of a Down's 2005 hit song Toxicity once upon a time!! Let's get back to that.