

A Harm Reductionist's Guide to Ketamine

Ketamine has been quite the buzzword in mainstream news and nerdier circles alike in recent years, and for good reason. Ketamine has unique properties which in turn make it a uniquely challenging compound to play with - particularly in order to reduce risk to recreational users. This guide hopes to bridge the gap between the effervescent articles trumpeting the benefits of ketamine with what's actually been established in the clinical literature.

For more references on creating this document, check out our full bibliography on our ketamine portal page.

Regretamine

There are a few ways people frequently run into trouble with K. Here's the most common ones:

- As with many nondescript white powders, **different batches bought on the black market have different potencies**. Unless you're getting it via prescription, or getting some very specific third party lab testing done, you probably don't know how hard your new batch will actually kick your ass into the cosmos.
 - Ketamine is increasingly getting cut with **fentanyl** and other nasty stuff that can cause death by overdose. **Test before you ingest**.
 - Consequently, exactly **how much you need to get you high might vary from batch to batch** - and particularly when you might be sampling other people's party favors.
- **Ketamine's effects are very dose-dependent**: The different points on the dose response curve are different enough that some people liken them to different drug experiences entirely. This can result in people getting an experience utterly unlike what they were looking for after they cheerfully eyeballed the dosage. As an example: a small nasal dose of ketamine (~20-40mg) can make you feel like you had a drink or two. A large nasal dose (~100-150mg) will put you in the infamous "K-hole," pulling you fully out of your body and making it impossible to walk or navigate your physical environment. It's almost like two different drugs altogether at two different dosage ranges. More on this later.
- Short duration with its most common routes of administration - up the nose! - means **compulsive redosing can quickly become an issue**.
- **Ketamine is physically addictive** in a way most psychedelics are not. This means it's a slippery slope to daily usage. You can stop at any time, right? Right?
- **Tolerance can build rapidly** over the course of the night, meaning the amount you need to find your sweet spot by night's end might not be the same amount to start off your experience a week later.
- That slippery slope isn't just a problem for your wallet, but also for your bladder. Over time, **high dosage, high frequency ketamine use causes damage to your bladder** that is not only intensely painful, but can even result in its eventual removal. [Pissing](#)

[blood](#) is not a good look and the disorder to blame has a name: “ketamine bladder syndrome”.

- **Long term, high frequency use of high dosage ketamine has been linked to cognitive and memory defects** - and may actually cause *increased* depression.
 - Important caveat: when we say “high dose”, think the amount that would typically be used for anesthesia but that some people can build a tolerance to in their recreational use; anesthetic doses are what most animal-based clinical studies on ketamine neurotoxicity are using, and are not what most recreational users are doing on the daily.
 - There’s a particular irony to this, given that so many folks may start using K as a way to treat mental health issues in the first place. **The dose makes the poison**, and that’s particularly true when it comes to neurotoxicity, regardless of the drug. You can have too much of a good thing.
 - On that note, neurotoxicity has been the most conclusively demonstrated for adolescent brains that are still in development and can trigger neuroapoptosis (a fancy word for cell death) and other pathophysiological cascades at a level beyond what is healthy for the developing brain. No K for kiddos, including if they’re still *in utero*. You don’t want to mess up someone’s gene expression at that age.
- For folks with underlying psychotic-spectrum disorders, like schizophrenia, there’s some clinical evidence that **ketamine can actually exacerbate psychotic symptoms in the short term**. There is some clinical speculation that this is due to ketamine’s impact on dopaminergic systems, which are already out of whack for many living with schizophrenia. As tempting as it might be to try ketamine out to reduce the often co-occurring issues of depression and anxiety, think twice if schizophrenia or other similar disorders are in your own personal history.
- While K isn’t a central nervous system depressant per se, **K decreases situational awareness enough that it can be easier to die, especially if downers (alcohol, benzos, opioids) are involved**. Deaths related to K have varied from drowning in bathtubs in attempts to replicate sensory deprivation chambers to falling down the stairs to autoerotic asphyxiation gone wildly wrong. If you go into a K-hole and no one’s watching to make sure you’re not about to suffocate on your own blanket, you might never crawl back into conscious existence again.
- As with other drugs, **it can be easy to get so high you can no longer provide meaningful consent**. That, plus its disinhibitory effects, lend to its reputation as a “date rape drug” (along with GHB), often enough that it’s got its own jargon in the forensic literature as “drug-facilitated sexual assault” or DFSA. This has led to ketamine being shut out of some recent decriminalization efforts in California and other states.

Why Special K is so special

OK, OK, ketamine has some perks too when it comes to recreational use:

- Short duration of action means you sober up again quickly and return to baseline with minimal aftereffects. This means you can get your hopefully not sorry self home and have a good night's sleep afterwards.
- Aboveboard and supervised therapeutic access varies depending on where you live, but is increasing rapidly; for folks looking to use this as a medicine with third party oversight and expertise to guide them, there are often accessible ways to get it perfectly legally and not rely on sketchy black market deals and DIY therapeutic regimens. Ketamine treatment is even covered by some insurance programs!
- There's plenty of speculation that some folks who are taking K recreationally may actually be self medicating, either intentionally or unintentionally for undiagnosed or undertreated underlying mental health issues
 - This is particularly the case for folks experiencing treatment resistant depression or chronic suicide ideation: for some folks, it's the first, and only, thing that helps symptoms relent and for them to get on with their lives. If they have a little fun with their medicine and aren't running afoul of aforementioned pitfalls in the prior section, is that such a problem?
- Once you've got the dosing down, it can be combined relatively safely and spectacularly with a wide variety of psychedelics, particularly on the tail end as a soft landing to integrate your experiences
- You're unlikely to die of a ketamine overdose; the LD50 is literal orders of magnitude more than your typical therapeutic dose. Its acute danger is not so much in the amount you take, but in the conditions in which you take it and what you combine it with.
- Ketamine is a true analgesic - it doesn't just make you forget about the fact the pain is there, in the way opioids, alcohol, and other traditional painkillers do. For folks experiencing chronic pain, this provides unparalleled relief.

A High Level Overview On How It Gets You High

Ketamine, in a nutshell, primarily acts as a N-methyl-D-aspartate (NMDA) receptor inhibitor (gesundheit!). As a neurotransmitter, NMDA may not be as entrenched in pop psych as serotonin or dopamine, but it is every bit as important for your body's basic functions. Ketamine also has a smattering of activity on a wide variety of other receptor systems, including (but not limited to) opioid and dopaminergic systems.

The sprawling impact across different systems leads to a unique drug profile. Ketamine primarily acts as a dissociative with analgesic properties: in addition to making your mind feel farther from your body, it also makes the pain actually go away (instead of just easier to forget about like many traditional painkillers). These "depersonalization" and "derealization" effects are handy escape hatches from the everyday horror of modern existence. Less pain, either physical or psycho-emotional, usually makes for a better time, so it's not surprising to see something first intended for medicinal uses become such a popular party favor.

Despite having the general effect of chilling you the fuck out, ketamine is *not* a central nervous system depressant - unlike other chillaxing drugs like alcohol, opioids, benzos, etc.. This means

ketamine has a way of relaxing you without also depressing your heart rate or respiration at most doses (part of what makes ketamine particularly useful as an emergency room anesthetic.) In fact, ketamine actually elevates your heart rate a little bit.

Ketamine also has distinct effects at different dosage levels, part of what makes it extra intriguing - and occasionally problematic. Subthreshold dosages have shown efficacy for treatment-resistant depression that picks up your heavy heart rapidly and for weeks at a time; at threshold for talk therapy in combination with an ever increasing list of modalities; and full on “K holes” bring you so far out of your current reality that you can often glean important perspective on the mundane aspects of your earthbound daily life.

There’s a few quirks of how ketamine interacts with your brain on a structural level that make it particularly useful for treating depression-related mental health issues. Much of this science is still being furiously studied in clinical circles and fiercely debated as the studies flood out, but in brief, researchers think ketamine relieves depression through:

- Anti inflammatory effects in the brain (in low doses) - *possibly* due to cytokine upregulation, but that’s up for argument amongst the nerds
- Interactivity with opioid receptors (=pain relief, both physical and psychoemotional)
- Interactivity with glutamate via the AMPA receptors (in turn via a metabolite of ketamine, (2R,6R)-HNK - gesundheit!)
- Repair of mitochondrial dysregulation
- D-serine serum reduction (= less neuropathic pain)
- Synaptogenesis (ie, making more of the brain structures that allow you to do the you things)

tl;dr: brains are complicated, and this complicated drug interacts with this complicated system means that there’s a lot of complication to consider for both clinical and recreational purposes.

Isomers

Speaking of complicated: there are ever-so-slightly different versions of ketamine floating around out there. Ketamine, like many molecules, has a “left-handed” and a “right-handed” version, which are known as **isomers**. Ketamine has both an **S-isomer** and an **R-isomer**. When combined in equal proportions, these isomers create a **racemic** mixture. S-isomer ketamine is reported to have a more stimulating effect, while R-isomer ketamine is reported to have more of a sedating effect.

It has become more common for people who sell ketamine in underground markets to say that their product is either S-isomer or R-isomer. **There is no commercially available lab test which can prove this.**

Thus, anyone who tells you that they have either S- or R-isomer ketamine is either A) repeating something someone else told them, B) sharing their personal, subjective experience of

consuming this batch, which is highly individual and informed by a lot more factors than just the product itself, or C) blowing smoke up your ass to sell you more drugs to smoke or put up your ass.

Specifically, there's a lot more ketamine out there being sold as S-isomer than likely exists. In the United States, Janssen Pharmaceuticals sells a patented S-isomer ketamine nasal spray called **Spravato**, but its manufacture is tightly controlled and it would be extremely difficult for anyone to sneak out enough to comprise the volume of supposed S-isomer ketamine being sold.

In summary, if you're buying ketamine from an underground supplier, assume it's racemic, regardless of what they tell you.

Ketamine, safer

Without further ado, here's some harm reduction tips on keeping you & your community members safer if you're choosing to use K. Let's expand on some of those earlier bullet points:

Before a K experience, it's important to think about what it is you're hoping to get out of the experience. For example, some folks take it as a way to chill out before bedtime as an alternative to alcohol... and others as a way to make the blinky lights just a little more blinky at the local rave, or to lessen the edge on killer social anxiety keeping them from feeling connected in community. The experience you want to have should in turn factor into the dosage range and route of administration you're looking for. More on this in a bit.

As mentioned earlier: **the dose makes the poison**, and this applies to ketamine more than most drugs we talk about. **Different dosages of ketamine can feel like entirely different drugs, or even the same dosage but taken via a different route of administration. Start low, go slow.** You've got all night. Don't fuck it up by rushing in to your good time.

When trying to evaluate your dosage in comparison to the general population (or for that matter, the hyperlocal population that is your friends with ketamine), remember: **your biology may vary**. Everything from your genes (ex., P450 enzyme variations) to whatever your preexisting tolerance for ketamine is can have an impact. The dose your friends are all taking might not be the dose for you.

Tolerance towards ketamine kicks in quickly. If you're finding yourself needing to increase your dose over time in order to have the same experience, that might be a good indicator that you've developed a potentially unhealthy tolerance - which can lead to long term health issues, such as ketamine bladder syndrome. Want to pee in a bag for the rest of your life? Didn't think so. More on this later if you're in this picture and you don't like it.

Time dilation is common on K and it can be hard to keep track of when you last dosed while you're under the influence - let alone articulate those times to those around you when all of

spacetime is... doing a thing. Write down your dosage amount and times on a piece of paper or on a disappearing encrypted Signal thread with your friends. Your friends, and any medics that might need to be called, will thank you for it. If you're feeling skittish around leaving a digital trail, try at least setting a stopwatch on your phone so that you can always know how long it's been since your last bump.

Don't dose someone without also asking your friend all the relevant information that you should be asking yourself. Dosing someone places what happens to them squarely as your responsibility, including from a legal perspective. Don't forget to check for contraindications, for their intentions, their boundaries, and running them through all the potential risks that you are aware of and have asked of yourself.

And finally: knowing what it is you want in advance can help you establish clear boundaries for what you want, and don't want, to do while on K. Clearly articulate those boundaries to those you'll be sharing the experience with as well as how others can help keep you safe - such as who you're going home with after the party dies down.

Ketamine Interactions and Contraindications

As a reminder, don't take anything we write to be an exhaustive list: always, always check all medications and supplements you are on with whatever you're planning on putting in your body for contraindications.

Be extremely careful mixing ketamine with central nervous system depressants - think alcohol, Xanax or other benzos, opiates, etc. The combination of a powerful dissociative with a downer can result in a lack of situational awareness, such as slowly suffocating to death on an oversized sweater or not being aware that you're so slowly going hypothermic as you're staring out at an absolutely endless skyline on a chilly, windy, rainy San Francisco rooftop. There is additionally some evidence that taking benzodiazepines actually reduce the therapeutic benefit of ketamine, on top of the safety considerations.

Stimulants and cannabis both raise your heart rate and blood pressure, as does ketamine, so combining them can increase this effect. People with heart conditions are generally advised to avoid these types of combinations. Combining ketamine and cocaine is a thing some people do, which is definitely a heart-pounding combo and not always in the way you want your heart to go pitter patter.

Ketamine has a specific interaction effect with GHB which may result in more derealization than you were in for - they're both NMDA receptor antagonists. Some folks may also experience some extra surprise nausea! (No one likes extra surprise nausea.) Some people can combine dissociatives with G and it's fine, while others can't, so mix with care and enjoy the cosmic voyage if your body doesn't decide to get seasick along the way. If you've never tried to mix G and dissociatives before, combining smaller doses to start (like a threshold dose of G and a tiny bump of K) that will leave you less fucked if it turns out your body isn't all for it.

Ketamine mixes relatively safely with most (mildly stimulant) psychedelics. Some folks use it to take the edge off of some of the social anxiety, existential horror, etc. encountered on their cosmic voyage, or to help facilitate processing the aftermath of therapeutic sessions. If this is being used for this purpose, it is strongly recommended taking it after fully coming up and on the back half of a trip. And definitely don't make this your first time using either compound: best practice is to get a feel for how your body responds to each drug independently at different dosages before you think of combining them later on.

Ketamine's got a few niche interaction effects as well, impacting the efficacy of a variety of retrovirals and antimicrobials (ex. Rionavir, Rifampicin, Itraconazole, clarithromycin, erythromycin) and a smattering of psychiatric medications for stabilizing seizures (ex. phenobarbital, phenytoin) and even some plant-based medicines (ex. St Johns Wort). Many of these interaction effects are because some medications are metabolized by the same CYP2B6 and/or CYP3A4 liver enzymes, resulting in competition for use of these overworked enzymes. Your poor liver can only take so much: if you really have a need to have some fun, find something that won't use the same enzymes your medications need in order to be processed, or risk your liver's good function.

There are also some mood stabilizing medications, such as lithium and lamotrigine, which have been shown to (non-dangerously) change various aspects of the ketamine experience, with mixed clinical conclusions on the degree to which they attenuate ketamine's celebrated anti-depressant effects. Some psychiatric medications, such as benzodiazepines, have been more conclusively demonstrated to attenuate the anti depressant effect of ketamine. If you're already on psychiatric medications and were thinking of supplementing your mental health care with some DIY ketamine treatments, research with especial care.

And it wouldn't be a contraindications section if we didn't mention our favorite complication, the GRAPEFRUIT. As with many other things you might want to try to have fun with, grapefruit juice can not just increase the peak subjective effect of orally dosed ketamine, but also increased the overall effect time (in one study at a whopping 24% increased trip time.) Watch those brunch palomas.

Whatever medications you might be on, run it through a quick internet search for contraindications on a site like [Drugs.com's interaction checker](#), or better yet, if there have been any nifty studies specific to your meds you can pull off of [Google Scholar](#).

Routes of Administration (ROA)

People can put ketamine into their body pretty much any way they feel inspired to, helped along by the fact it's readily soluble in water. As always, crosscheck your dosages on a site like Erowid or PsychonautWiki specific to your ROA. Here's a few tips to consider for each ROA:

Sublingual/Oral

- Most commonly found in prescription formats. This tends to be a slower & longer acting, more mild (and more often subthreshold or just-above-threshold) way to ingest. Depending on the study, bioavailability tends to be anywhere between 17-24%.

Nasally

- Nasal sprays make ketamine a lot less unpleasant of an experience. Check out our guide on making them here.
- Powder doesn't always absorb all at once; particularly if it's not finally powdered, "pockets" of unabsorbed ketamine in your nose can become surprise highs later on when they dislodge or finally dissolve. Nothing makes a nosebleed quite as exciting as a surprise K hole in the middle of it.
- What's the bioavailability you may ask? Studies indicate between 25-50%.

Intramuscular (IM)

- If you're looking to hop down the rabbit (K) hole, this is the way to do it: bioavailability clocks in around the 90% range. Use new, sterilized needles to minimize infection risk, and make sure you are closely monitored by a sober someone while you're under: see later section on K holes.

Suppository (Boofing!)

- Anecdotal evidence varies wildly on boofing ketamine and its safety, and there's not much out there in terms of clinical guidance on toxicity. We generally advise when there's a lack of evidence either way to play it safe and not put it up your butt, in case there are metabolic byproducts of ketamine that cause damage when in direct contact with your sensitive bits, but haven't been specifically studied yet.
- As a general rule of thumb, if you're considering switching from other routes of administration because you can't get high enough fast enough and the bioavailability of boofing is enticing, you should probably be questioning the tolerance you've built and whether you're using in a sustainable manner.

From here, we've split this document up based on different use cases, as your subjective experience (whatever dose and ROA you choose) really changes potential risk factors. Note that while some of the above ROAs are more common to some types of experiences, they don't always neatly line up.

Microdosing/Sub Threshold Dosing

This is a more benign dosage range, and the one with the highest safety margin. This is also often the space in which the minimal effective dose for self medication purposes is found.

Inching upwards through this range for a given ROA or new batch can be useful in the spirit of "start low, go slow" to find your threshold for future party purposes.

Above Threshold & Party Ready!

From above threshold onwards, *always* let a friend, ideally a sober friend, know that you are doing K. Bonus points if they can act as an accountability-buddy for how much you actually mean to be taking and how often: ketamine's uniquely addictive properties make it an easy slope to slide down on the compulsive use front. This is particularly the case if you're redosing nasally and have a pile of powder or nasal sprays at the ready. Strongly consider capping your intended usage before you start taking drugs, and writing down the timing & amount of each dose either in an encrypted note or the old fashioned way on a piece of paper.

Dissociation from the body, particularly from prior traumatic experiences that may inform your day to day behaviors, can result in a less inhibited state and potentially doing things (or people) that future!you won't feel so happy about. And finally: remember that consent can be revoked at any time while you're high, no matter what was negotiated in advance.

Most in-the-moment issues with ketamine are found due to an akute kase of the klumsies. Funny how it's harder to make your way down the stairs when your feet have been abstracted into their platonic forms. If there are people having trouble navigating their physical environment while navigating the cosmos, your best bet is to encourage them to stay seated or lying down, and remove anything sharp or edged they might hurt themselves on.

Down The Rabbit (K)-Hole!

Yes, yes, the time knife. This experience is a unique feature of ketamine, and one some folks find thrilling - and others, healing. Nothing quite like staring at your own ego from outside of a six dimensional cosmic cube for a bit of perspective on your own life.

Predictably enough, when you're off having a grand old time in non-Euclidean space, you're not going to have much awareness of what's happening consensus reality. There's a reason these higher doses (most often, but not always, applied via IM) double as anesthetics in ER settings. As we've iterated a thousand times already, and will iterate a thousand times again, **this is not a dose you should be taking unsupervised**, and especially not around things that may end up blocking or constricting your airways. Your body isn't great at keeping itself safe when the mind is off having a cosmic adventure. This is why you have friends.

Again?! Redosing

Re-dosing can be even trickier than figuring out your initial dose. We don't recommend redosing before at least 30 minutes have passed - preferably 60-90 minutes - after you've started coming down from your original dose. A good rule of thumb is that the re-dose should be no more than $\frac{2}{3}$ your initial dose to maintain the same level of high, as you will still have quite a bit of the original dose in your system.

Knowing your own ideal re-dose timing is another highly individual thing that you have to figure out slowly and very carefully. Ideally, collect written data in the name of conducting the smallest of science experiments with the sample size of you, and analyze trends later when your sober self is ready for some science.

As we've mentioned a few times: watch that compulsive redosing. Brains are very good at tricking themselves into taking more ketamine than they maybe should.

When Shit Goes Sideways

If someone does geronimo down their K hole to the point of non-responsiveness and they *haven't* been taking any other nervous system depressants, they are *probably* pretty safe and will rejoin consensus reality on their own within an hour. **However, it is recommended to place them in the recovery position if they are not being directly and consistently monitored, and ensure nothing might restrict their breathing.** People have absolutely suffocated to death because of a misplaced blanket or drowning thinking they could use their bathtub as a DIY sensory deprivation chamber: no one wants to win that particular Darwin Award. The issue here isn't the ketamine: it's the solitude. Don't use K alone.

Ketamine: Long Term Konsequences

Don't use ketamine every day, unless you're prescribed it and have guidance from your doctor on how to do so safely (and like, an *actual* doctor; not all these trendy new ketamine telehealth prescribers are actually operating within clinically recommended guidelines.) When used at the dosages that have been established in clinical studies for treatment resistant depression, it's generally safe, but it's been a wild wild west out there and not everyone prescribing it actually has your best interest at heart. Or more specifically, your best bladder.

Like almost any drug, ketamine can be psychologically habit-forming if used too often, but (unlike many drugs favored by psychonauts) can also create physical addiction if used frequently. How quickly tolerance and then addiction builds varies by individual, and seems to roughly correlate with individual propensity for other addictions. If you already have some difficulties self regulating your alcohol, cannabis, and/or nicotine use, ketamine might warrant some extra caution and maybe an accountability buddy to keep an eye on things.

If you catch yourself (or a friend) needing a higher dose and more often to feel the same effects - or the motivation for taking K switches from for occasional funksies to soothing a consistent craving for it - you may want to have a serious check in around whether this is the slope you feel like slip-n-sliding down. A good benchmark: If you think you could quit tomorrow, try doing just

that for a few weeks. If it's harder than you thought it would be, there's some questions you'll want to be asking yourself.

Even though the effects of K are brief, withdrawal symptoms can last for weeks. If you or a friend are taking large quantities daily and want to stop, your best bet is to get some medical guidance on how to taper down off of it slowly and safely, specifically with the help of a specialized psychiatrist who can assist with medication support to manage withdrawal symptoms. The clinical science of how to best support someone trying to get off this sauce is evolving rapidly: make sure you're consulting an expert on how to do this, not just WikiHow.

Relapse with problematic ketamine usage is common. Developing a strong community accountability and support structure is key for helping folks transform a problematic relationship to ketamine and rewiring habits in how you exist in that community. Part of this may be thinking carefully about the implicit expectations in social spaces. Is ketamine usage expected at some events? Are there alternatives to ketamine provided? As an organizer, and as a friend, having conversations with folks that are having difficulty with their ketamine use patterns about how to support them (both individually and in how shared event spaces are structured) will help minimize harms of ketamine and move towards more sustainable use patterns. There's help if you need it; check in locally for support groups, or maybe form one yourself if there's a need in your local community.

And last but not least: the infamous ketamine bladder syndrome we keep talking about. Chronic high dosage levels of ketamine can lead to permanent damage to the lining of your bladder. If you're noticing issues with incontinence, pain while urinating, etc. and it's not a UTI, the solution is *not* to take more of your favorite analgesic to numb the pain some more. In fact, the single best thing you can do for yourself is to stop using ketamine - and find yourself a urologist who can help treat it before you end up peeing into a bag for the rest of your life. There's some promising work on using hyaluronic acid injections to reverse the damage, but the invasiveness of these largely injection-based procedures definitely requires formal medical intervention.

Ketamine use can also lead to damage to your liver over time, particularly by overlocking those poor overworked CYP2B6 and CYP3A4 enzymes that process so much for you already. Watch those contraindications!

Smart Supplementation For A More Sustainable High

Ketamine's increasing acceptance as a mainstream psychiatric intervention has meant that there's some actual science out there on what supplements you can take to minimize some of these issues... though the research is mostly limited to animals at this point.

Remember when we were talking about how ketamine has some neurotoxic effects in your brain at high dose, chronic use levels? Specifically, providing supplementation support in the form of acetyl L-carnitine (AKA ALCAR) pre- and post-ketamine usage to combat the inflammation and

oxidative stress that is coupled with that intensity of use might help. The caveat: clinical evidence is still limited to a handful of studies, and at inconvenient doses - try doing the math for 200mg/kg IV over to an oral ROA *without* balking at the number of pills you're being asked to ingest. We're all eager to see more research happen that can evolve into some tactically rich harm reduction.

In Summary

Ketamine can be both a powerful tool and a lot of fun, but you have to do a lot of careful work and monitoring to keep it that way. Track your use, use quantitative dosing methods to know how much you're taking, and never use alone.