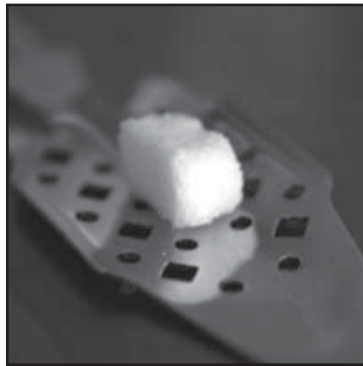


# Erowid Extracts

DOCUMENTING THE COMPLEX RELATIONSHIP BETWEEN HUMANS AND PSYCHOACTIVES

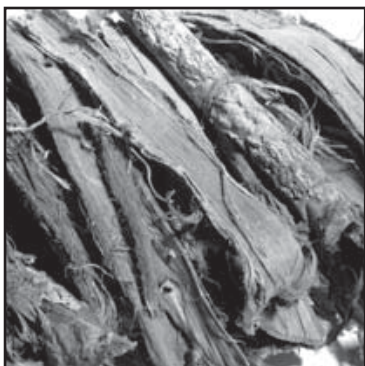
November 2007

Number 13



*"The problem to be faced is: how to combine loyalty to one's own tradition with reverence for different traditions."*

*— Abraham J. Heschel*



The Absinthe Enigma • Wormwood and Thujone • *P. viridis* vs. *M. tenuiflora*  
Varieties of Nicotine Experience • Khat Legal Challenges

## LETTERS & FEEDBACK

Hi there Erowid staff,

I'm just writing to say how much I appreciate your website. My father showed it to me several years ago and it's been fun to watch it grow in quality and content over the years. My dad adjunctly teaches a psychopharmacology class in town and always lists Erowid on his syllabus of recommended readings. I'm a college student and am surprised, once I start talking to other kids, how many of them know about the information available on Erowid.

I work at a gift shop at the LBJ Library here in Austin and we recently had Joseph Califano, current Chairman of the National Center on Addiction and Substance Abuse and former Health Secretary to Carter, here for an event, selling his new book *High Society* about the drug epidemic in America. He was signing books next to me and during a lag I asked him what he thought about Erowid. He hadn't even heard of it!

I was shocked that a person in his position, bombarding the audience with facts and figures, problems and solutions, had no idea that such a great resource exists. I plugged it as long as I could and he seemed to take genuine interest, writing down the URL himself on a Post-it note and admitting that his generation had a rather large disconnect with youth culture. Hopefully he took it to heart and had a look.

— RACHEL WEINHEIMER  
*Email to Erowid*

Your dumb fucking website gave a 16-year-old boy the idea to get high off of dimenhydrinate found in Dramamine, which then left him in a delirious state of mind and caused his mother [...] to have to rush him to the hospital [...]. He wrote down in a diary that he got the idea from this stupid fucking website that is just a sanctuary/recipe book for little druggies to find exactly what they need to get the best fucking trip. [...] maybe the filters on our computers should be better or maybe this shit should not even be on the internet in the first place. [...] this wasn't the first time he did something like this, but it was the worst. [...]

— L.M.F.  
*Email to Erowid*

First of all, thank you for such a wonderful site. I'm not a serious recreational user, but having some chronic pain issues, I tend to experiment a little to find ways to alleviate the pain (aside from standard Rx's from doctors). [...]

Keep up the good work. Although some might look at Erowid negatively, I look at it positively, in the sense that I'm smart enough to research things before I try them, and hopefully keep myself from an early demise.

— VIC  
*Email to Erowid*

I prefer informative websites that operate more as libraries than as pamphlets. In other words, I respect organizations and sites that present information in a way that is relatively unbiased so that the readers can arrive at their own conclusions, regardless of preconceived beliefs or notions. When it comes to researching psychoactive drugs, plants, and pharmaceuticals, Erowid.org is second to none at providing the most comprehensive informative look at these various substances. [...]

The presence of Erowid on the internet is indicative of a trend that I and others believe should dictate sensible drug policy in the United States. Let citizens be informed to the greatest degree possible while still offering them the choice to take a substance which is entirely up to them to put in their bodies. Erowid does not insult Americans' intelligence; it gives them a chance to use it.

— AGARIC  
*AssociatedContent.com*

I had the worst, most terrifying experience of my life last night (a panic attack following the use of some intense weed on an empty stomach). I seriously contemplated killing myself because I thought I was insane or in a dream I'd never wake from, but reading the archives on Erowid saved me.

Thank you, whoever you are. I love you.

— ALINA N.  
*Experience Vaults Feedback*

Awesome website! A more thoughtfully compiled compendium of information on the topic of psychoactives does not exist—at least not for the public at large. Bravo.

— ANONYMOUS  
*Letter to Erowid*

After looking up information on the antitussive properties of DXM, how shocked I was to find your website, encouraging [sic] the use of DXM for "recreational purposes", which, of course, means potentially harmful purposes. It is people like you who should be working to improve society with your creativity, not ruining it. I am just so sorry for you that you haven't found a good purpose for all your artistic and intellectual energy. [...]

— L.B.  
*Email to Erowid*

I cannot tell you how much this site has affected my life. [...] It deserves to be much more extensive and well known. Erowid has inspired me to pursue chemistry as a career path and I hope to contribute to the knowledge here one day.

— ANONYMOUS  
*Erowid Member*

Send correspondence to:

[extracts@erowid.org](mailto:extracts@erowid.org)

Please include your name, title,  
and city/state/country of origin to be  
published with your letter.

Letters may be edited  
for length and clarity.

## ERRATA

In the June 2007 issue of *Erowid Extracts* the Distillation Summary table on page 22 erroneously listed the number of General Content Pages as "14,526" rather than the correct "11,726".

The cause of the error was a new software installation that resulted in a large number of files counted as content that should not have been.

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EROWID is a member-supported organization working to provide free, reliable and accurate information about psychoactive plants, chemicals, practices, and technologies.

The information on the site is a compilation of the experiences, words, and efforts of thousands of individuals including educators, researchers, doctors and other health professionals, therapists, chemists, parents, lawyers, and others who choose to use psychoactives. Erowid acts as a publisher of new information and as a library archiving documents published elsewhere. The collection spans the spectrum from solid peer-reviewed research to creative writing and fiction.

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## Erowid Extracts

Number 13, November 2007

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Know Your Body  
Know Your Mind  
Know Your Substance  
Know Your Source

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# Recent Conferences

## **Conference Report: Mind States Costa Rica**

The 2007 Mind States conference was held in northern Costa Rica in June. For five days, approximately 70 attendees gathered in a lush tropical setting to meet like-minded people, discuss psychoactives, socialize, and listen to presentations about the ongoing fight for privacy, the future of psychedelics, visual art and film, *coca* and tobacco, the visionary mind of Philip K. Dick, and the influence of digital communications on human development.

Speakers included Jonathan Ott, Erik Davis, Mark Pesce, John Gilmore, Ann and Sasha Shulgin, and Joe Coleman. Fire and Earth presented with Jon Hanna on “The Alchemy of Thought”, discussing how psychedelics can lead to unusual thoughts and ideas, the process by which highly speculative hypotheses can evolve into pseudoscientific belief, and practical methods for reflecting on nonordinary states of mind and the experiences they engender in order to benefit one’s life. Earth and Fire also conducted an interview with Sasha and Ann Shulgin about life, the universe, and a bunch of other stuff.

Several Erowid crew members and volunteers attended the conference, getting a chance to meet and chat with a great selection of folks as well as travel around Costa Rica a bit afterwards. Photos from old *cacao* fields on the Caribbean coast and a variety of medicinal and mind-altering plants growing at the herb gardens run by conference speaker Tommy Thomas will eventually make their way onto the site.

During his visit to the herbarium, Erowid crew member Lux became particularly enchanted with the fruit of the *Synsepalum duclificum* bush. These weakly-flavored, mushy “miracle berries” are remarkable for their effect of making sour foods and beverages taste sweet for about 30 minutes after consumption. He hasn’t shut up about them since. :] ●

*To learn more about the wonders of miracle berries, see:  
[Erowid.org/herbs/miracle\\_berry/](http://Erowid.org/herbs/miracle_berry/)*

## **Conference Report: The Women’s Visionary Congress**

For three sweltering days in July, 65 people convened at Wilbur Hot Springs in Northern California to discuss women and psychoactives. Bringing together healers, activists, researchers, and artists, this gathering was designed to continue a long tradition of women exercising their right to shape social policies, as well as to introduce members of like-minded groups who may not have interacted directly at previous conferences. Drug policy reform, psychedelic research, and medical cannabis were represented, as well as shamanic traditions and historical perspectives on the psychedelic Sixties.

Nearly half of the attendees were speakers, organized into six panels: The Art and History of Women and Entheogens; Drug Policy Activism and Reform; Healing and Caregiving; New Entheogenic Research and Data; The Role of Entheogens in Death and Dying; and The Entheogenic Community. Fire and Earth Erowid spoke on this last panel. A theme of many talks was the role of feminine principles such as cooperation, nurturance, and education in describing and informing experiences, regardless of gender.

Mountain Girl (Carolyn Garcia) spoke as part of the Community panel, and her presence and insights were particularly valuable over the course of the weekend. Her stories about the Sixties offered a unique and entertaining perspective on the spiritual lineage of contemporary psychedelic explorers. It was Mountain Girl’s encouragement that inspired the event’s producer, Ann Harrison, to fulfill the dream of holding this gathering; Mountain Girl also suggested the event’s name.

The conference was co-sponsored by the Sibyl Society, a women’s education and service organization, and the Multidisciplinary Association for Psychedelic Studies (MAPS). It was designed as a benefit for the Women’s Entheogen Fund (WEF), which was founded in 2002 to make grants to women who spend a significant portion of their

professional lives studying psychoactive plants and chemicals.

The Women’s Visionary Congress coincided with the publication of Erowid’s Women & Psychoactives Vault. Several issues related to the use of psychoactives are gender-specific and, as with many fields of study, men have historically received disproportionate attention and documentation in psychoactive literature and research. In this new vault we are collecting articles and information related to women, including ethnographic accounts, clinical studies, prominent women in the history of psychoactives, and gender-specific health information.

An example is a 2006 article by Terner and de Wit in *Drug and Alcohol Dependence* titled “Menstrual cycle phase and responses to drugs of abuse in humans”, which discusses recent studies that have examined subjective and physiological responses to psychoactives in relation to menstrual cycle phase. The authors found that cyclical changes in ovarian hormones impact the central effects of stimulants such as cocaine and amphetamine, though their review found little influence of hormone levels on the effects of other drugs. “Similar discriminative-stimulus effects of D-amphetamine in women and men” by Vansickel et al. (2007) noted differences between women and men on only three of 28 subject-rated items. Unfortunately, Vansickel et al. did not evaluate menstrual cycle data in female subjects and, as a result, might have under-reported potential gender differences.

As the story of psychoactive research and culture continues to evolve, public perception and knowledge about relevant gender issues evolve as well. With the internet permitting greater access to diverse viewpoints and sources of information, hopefully more voices will continue to be heard, representing a broader spectrum of opinions and ideas, and encouraging a concordant evolution of attitudes and beliefs. ●

*Erowid.org/psychoactives/women/*

# Khat

by Fire Erowid

## Faces Legal Challenges

Native to East Africa and the Middle East, *Catha edulis* (khat or qat) is a shrub that has been used for centuries as a mild stimulant. While the plant is not scheduled in the United States, cathinone—one of the chemicals in fresh khat leaves—was placed in Schedule I in 1993, making it illegal to import, sell, or possess without a license.

Over the past year, a number of federal and state cases have been brought against individuals for importing and distributing khat in the U.S. Much of that khat originated from Kenya and moved through England before entering the country—a journey that takes around five days. The transportation time is important because once the leaves are picked, the cathinone breaks down into a different chemical, cathine, in as few as two days.

Cathine was “temporarily” placed in Schedule IV by the DEA in 1988 to bring the U.S. into compliance with the 1971 Convention on Psychotropic Substances, which established an international control system for psychoactive drugs.<sup>1</sup> No further regulatory action was taken. Substances that are placed in Schedule I by “temporary” or “emergency” ruling must undergo a formal review process within 18 months in order to be permanently scheduled (as with BZP and AMT in recent years). However, when a substance is “temporarily” scheduled to meet treaty obligations, the Controlled Substance Act requires only that the review process be completed within a “reasonable time”. This clearly did not happen in the case of cathine.

One lawyer who has defended over 70 people charged with possession or conspiracy to import or distribute khat argues that by the time the leaves reach the U.S. their cathinone has degraded, leaving only cathine. He further contends that “a chemical can not be temporarily listed for 19 years” and notes that in all federal khat-related cases he has handled, “the Justice Department has conceded this point” and prosecutors were not allowed to refer to cathine as a scheduled

chemical.<sup>2</sup> However, a charge of conspiracy to import/distribute does not require that cathinone be present, only that a defendant knowingly tried to import or distribute it. One defendant in New York was recently found guilty of these two charges despite the jury’s finding that no cathinone remained in the khat at time of distribution. Since most states have now scheduled cathine, state charges could be brought for possession or distribution of khat on the grounds that it contains cathine.

Whether or not a plant that contains a scheduled substance is itself illegal to possess is an issue that has come up frequently in recent years. The Official Commentary of the Convention on Psychotropic Substances states that a plant that contains a Schedule I substance is not illegal, though an extract of that same plant likely would be. Many European countries have taken a similar position regarding plants that contain chemicals from any schedule, but the U.S. is inconsistent on this point. Mescaline-containing cacti, LSA-containing seeds, and DMT-containing plants are regularly sold by botanical companies and gardening stores without legal trouble. Charges have been brought against a few individuals for importing or selling such plants, usually in cases where the vendor is demonstrably aware of a plant’s psychoactive properties. In the case of *Catha edulis*, the FDA issued an alert in 1993 (prior to cathinone being placed in Schedule I) stating that *Catha edulis* “would be subject to the same controls as cathine” and should be seized at the border.<sup>3</sup>

In January 2007 we were contacted by the lawyer in the New York case. He had seen the glass molecules Erowid offers as membership gifts, and asked if we could provide him with a cathinone molecule to use in his case. We worked with the glass artist to fulfill the lawyer’s request. The lawyer reported that he “used the glass molecule to good effect in



*C. edulis* Leaf, Photo by Erowid

the jury trial in New York to demonstrate [...] how the hydrogens would latch onto the cathinone molecule and convert it to cathine.” The chemist who testified for the lawyer then explained that when using mass spectrometry—an analytical method for identifying chemicals in plants or other material—these two similar molecules are very difficult to tell apart.

Judges in different jurisdictions appear to be handling khat cases differently. Two defendants in Ohio were sentenced to 20 years each because of an Ohio requirement that plant material be included when calculating the weight of a Schedule I substance (cathinone).<sup>2</sup> Five Seattle defendants facing federal charges of conspiracy to import and distribute khat had all charges against them dropped in May 2007—although prosecutors retained the right to re-file charges in the future.<sup>4</sup> Others have signed plea agreements in an attempt to lessen possible prison sentences.

It seems that the ongoing attempts to control *Catha edulis* are due at least in part to its use primarily by Muslims from Africa and the Saudi Arabian peninsula, with many of the defendants being Somali immigrants. Unfortunately, selective enforcement of drugs laws is as old as drug laws themselves. ●

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2. Moore S. Personal communication. Sep 2007.
3. Food and Drug Administration. “Automatic Detention Alert for *Catha edulis*”. IA#66-23. Feb 9, 1993.
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# Varieties of NICOTINE EXPERIENCE

COMPILED BY SPOON



## UNCOMMON USES OF TOBACCO AND NICOTINE

Given its long history, tobacco use in the United States has become a complex and heavily culturally-coded activity. Today's dominantly negative image of tobacco and cigarette smoking, based on abundant scientific evidence of health hazards, has shifted dramatically from the widely-accepted sanguine portrayals of mid-twentieth-century marketing. Recent statutes in some states banning smoking in public have further marginalized smokers. The city of Belmont, California has even banned smoking in multi-unit dwellings like apartments and

condominiums. This effectively makes smoking in one's own home an actionable offense for some U.S. citizens.

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**The visionary properties of unprocessed tobacco leaves are sometimes romanticized—although infrequently explored—by non-indigenous psychonauts.**

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condominiums. This effectively makes smoking in one's own home an actionable offense for some U.S. citizens.

While tobacco is now viewed as a public health menace in industrial societies, it is considered the principal plant ally of traditional shamans throughout the Americas. Consequently, the visionary properties of unprocessed tobacco leaves are sometimes romanticized—although infrequently explored—by non-indigenous psychonauts. And yet, while the use of large doses of tobacco for ritual purposes was certainly a part of native life in North America, heavy, chronic use that might be characterized

as dependency by modern standards was equally evident in some tribes.<sup>1</sup>

Regardless of cultural context or method of administration, nicotine has its own trajectory and distinct psychoactive effects. For millions of regular smokers, the ubiquitous "smoke break" represents an interruption in the day's routine where a potent drug, with clear cognition- and mood-enhancing effects, is delivered to their brains. The same can be said for regular tobacco chewers and cigar or pipe smokers. But once users become physically dependent, they rarely use tobacco simply for the psychoactive effects. Instead, it becomes integrated into a deeply habituated behavior laden with cultural, psychological, and pharmacological motivations that have little to do with strong changes in consciousness.

Given the pervasive stereotypes surrounding cigarette smoking and other forms of tobacco use, it can be difficult to find a meaningful way to use nicotine specifically for its consciousness-altering properties. We've collected some examples below that illustrate different approaches to tobacco and isolated nicotine, some radically removed from more common forms of use.

1. Von Gernet A. "Origins of nicotine use and the global diffusion of tobacco". In: Ferrence R, Slade J, Room R, et al. (Eds.). *Nicotine and Public Health*. Am Public Health Assoc. 2000. 3–15.

### AN UNCURED VARIETY OF TOBACCO

BY KLEINESKIND

I have been reading about many different legal types of medicinal herbs. I felt rather compelled to test a few out. My first mix was that of uncured tobacco and catnip.

I read that the Native Americans smoked uncured tobacco, so I wanted to try it. I live in the middle of farmland and get free stock all the time; this season, I asked for uncured tobacco. I let it dry in my closet (dark, dry environment) and got both a pipe and papers to test the different effects of the heat in a pipe compared to the heat in a joint.

With 2 g of uncured tobacco in my stone pipe, I noticed a bit more effect than I would expect from normal tobacco.... It was not potent enough to cause unconsciousness after as little as a cigarette, as I had read it could be. It made me a bit lightheaded, as normal tobacco or cigarettes would, but nothing too out of the ordinary. The slight euphoric feeling subsided quickly.

1.5 g of uncured tobacco in my papers: Not very different from the experience with my pipe. I did get knocked with a quicker delivery of the drug, but, as before, it subsided rather quickly.

I tried a lot of mixing with catnip. The more catnip I put into the mix, the slower the onset of the euphoria. I did notice that

the hyperactivity and uneasy feeling lasted longer with the tobacco alone.

My conclusion on the matter of uncured tobacco is that it was quite unimpressive. It is not as powerful as I had read it to be. Now, it could be the variety of tobacco. There are a lot of variations to this plant, and the Indians may have used a specific hybrid different than what I was given.

## RUSTICATION: SMOKING *NICOTIANA RUSTICA*

BY FORMERLY CHEEBO

I'm 19 years old. My friends and I are all avid fans of tobacco, and all passionately hate commercial cigarettes. I personally started with pipe tobacco and drifted into cigars, hookahs filled with shisha, and hand-rolled cigarettes. None of us smoke very often. Recently one of my friends and I went in together on an order of quite a few psychoactive substances. *Nicotiana rustica* was the biggest reason my friend wanted to put this order together, and I just discovered how wise his decision was today, when I smoked a bowl of it at my house.

I inhaled the heavy smoke, and immediately wished it was cured and moist pipe tobacco. It burned intensely, and was far, far too hot. It gave me terrible tongue-bite, and burned all the way down. However, the taste itself was not bad. It was reminiscent of cigars and had an unrefined leafy sweetness. I continued to inhale and quickly noted that my chest hurt a lot, not

from the hot smoke, but from something else. It was the exact same sensation I get from having acute bronchitis and coughing a lot. It went away, however, and another feeling came on.

I began to feel a blissful clarity, an acuity that I had never felt from tobacco before. I looked around me, up into elm branches and the wispy cirrus clouds in the sky, and was pleased. Everything was more real, and very nice. My vision was "larger" and brighter. I also became a little nauseated, but I think water would have helped with that. I got on the rope swing that hangs from the elm and enjoyed life quite a bit for a few minutes. The blissful clarity subsided rather quickly, but it is conducive, I think, to a mindset that could be very good, at least if used in moderation.

Tobacco has never made me feel like this before. I think regular tobacco could do it, but it would be hard (for me, at least) to inhale enough smoke from regular tobacco fast enough to get to this state. We started out with *N. rustica* by making fun of it, but it is a very special, powerful herb, and I am glad I've experienced it.

## TRANSDERMAL TOBACCO IN PSYCHEDELIC SESSIONS

BY K.

I have been taking mushrooms in the context of psychedelic therapy every few months for the past two years. During sessions, my therapist will sometimes rub tobacco leaves on my skin if I seem to need a shift in the trip. At first she uses it on pulse points and does some energy work with me. To get to the next plateau, or if I am "stuck" in a difficult place or getting too spacey, she rubs it on my skin, usually my arms, sometimes in conjunction with bodywork. It isn't specifically for grounding or for lightening the trip; it can go in either direction, depending on what she thinks I need.

The tobacco she uses is prepared by the Mazatec shaman with whom she

works, who grows the plants herself or buys them from people she knows. The shaman works extensively with different types of tobacco plants. The leaves my therapist uses are either small individual leaves or shredded leaves that are bright green, dry, and soft. They roll up as she rubs them on me, and they don't transfer their oils to my skin, which at first surprised me because I thought of tobacco as having many tars and dyes, even in its natural form.

The smell is really nice, not like burned tobacco at all. Sometimes she does burn it, for smudging, but we don't smoke or eat it.

It's hard to really put my finger on how the experience is changed by using tobacco, because it's so subtle and everything else is happening at the same time, from the effects of the mushrooms to the physical interaction with the therapist. It engages the trip with a quickening feeling as it's rubbed on, a kind of looseness, as if stuff is moving from one side of the body to the other.

## TAKING DEEP LUNGFULS OF STRAW CIGARETTES

BY MARCOSBJ

I don't smoke commercial cigarettes and never will, because: 1) I'd rather spend my money on cannabis or save it for salvia, and 2) I don't like the smell very much.

I actually hate regular cigarettes, so I don't smoke at all when sober, only when I am really drunk. But I love "straw cigarettes". I'm not sure if they are available in the United States, but here in Brazil they are quite common. There are some commercial brands, but the real thing comes from the Brazilian peasants who live in the countryside. They roll it themselves (using strong rolled tobacco and corn straw) and smoke it while drinking cachaça (a hard liquor made from sugarcane, the Brazilian version of vodka or sake).

Since I love the native culture, I like to follow it...but in a different context. Sometimes I drink a couple of beers and some cachaça. When I feel that I am under the effects of alcohol (but not drunk) I smoke a straw cigarette (regular cigarettes work as well but smell bad) for three or four puffs, then I let it go out. Since I don't usually smoke, and the tobacco in these cigarettes is strong, I feel the nicotine very strongly.



*Nicotiana rustica*, Photo by Thomas Glowka

I start feeling light, then dizzy, then as if I'm floating. At this point I walk a little bit and begin to feel as though I'm flying. I repeat this a few times during the night and when I no longer get strong effects, I abstain for three or four months until I have another drinking night.

I really like the feeling. If you have access to strong tobacco cigarettes, try it, but don't smoke too much. It's addictive and the good effects are only there if you smoke a few puffs at infrequent intervals.

## HOMEMADE AMBÍL FROM *NICOTIANA TABACUM*

BY PAPPA

I followed a method of preparing ambíl, the South American lickable tobacco preparation, reported in the book *Tobacco and Shamanism in South America* by Johannes Wilbert.

I took approximately 10 medium (20 cm length) tobacco leaves from my *Nicotiana tabacum* plants, chopped them into strips and put them in a large pan with enough water to cover them. I brought the pan to a boil and simmered for two hours, adding more water at the 90-minute point to keep it from boiling dry.

While they were simmering, I tried to prepare alkaline ash of *B. caapi* bark by

burning it with a blowtorch. Unfortunately, it was converted to charcoal rather than white ash, and the resulting water steeped in it was pH neutral. I then prepared some ash from chillum charcoal and obtained a pH 9 alkaline solution. This alkaline ash solution is unnecessary, as you can use sodium bicarbonate, but I was interested in trying a more traditional method.

Once the pan was cool, I took out the leaves, squeezed all the liquid out into the pan, and discarded the leaves. Then I transferred the tobacco water to a smaller pan and boiled it vigorously until there was only a 6 mm depth of liquid in the pan. The heat was then turned down and the liquid gently simmered and blown on to aid evaporation.

Eventually, only about 30–40 ml of very dark brown liquid remained. While holding the pan at a 45° angle, approximately 30 ml of alkaline ash solution was added to the liquid, followed by a quarter-teaspoon of baking powder. This made the liquid froth immediately. After frothing, much of the liquid had coagulated on the angled bottom of the pan and was thick and dry; the rest was still in liquid form. After very gentle heating of the liquid, and much scraping of the coagulated stuff, I ended up with a half-teaspoon of very thick and sticky Marmite-like material that I put into a snuff box. The final result was a little thicker than I would have liked, but from what I have

read, well within the bounds of what can be described as “genuine ambíl”.

A little while later, I and two others tried the ambíl, using amounts about the size of two grains of rice each. One said she felt nothing more than a strange tingling in the hands and a slightly restless feeling. The second person and I both agreed we could feel a pronounced sense of restlessness and vaguely amphetamine-like stimulation. I could also feel my heart pounding, and definitely felt on edge.

The whole experience felt a bit like an adrenaline surge, fairly mild and more or less pleasant. Subjectively, it lasted about 30 minutes. It certainly felt nothing like a “first cigarette of the morning” tobacco rush.

## MAINTAINING ADDICTION, WITH TOBACCO SNUFF

BY NICO

I've never been much of a fan of nasal drug administration because I've always had the idea that snorting in and of itself was a negative act, and it looked bad, especially in public. However, my friends had some minty snuff with them, and being a nicotine addict (cigarettes), I gave it a try. I liked it so much, I ordered eight different flavors of McChrystal's snuff to experiment with: rose, bergamot, lemon, menthol, eucalyptus, spearmint, violet, and camphor.

The first sensation of snuff in my nostrils can be a little painful and discomforting. It burns and feels as if it's eating away at my nasal mucus lining. Thirty to sixty seconds later the sensation fades away and I am left with an amazing aromatic sensorial experience and a growing, almost unnoticeable buzz that only nicotine addicts can relate to.

Nasal snuff packs quite a punch. I take a pinch between forefinger and thumb, and either lay it out on the back of my hand or make a little line on a flat surface, then introduce it into the nostril. I don't do this particularly slowly, but if done too quickly it feels like inhaling an arrow that awkwardly points out of my ear, or a sharp, burning ache in the sinus that oddly seems to come out of a random point in my head. Twenty to thirty seconds later, the uncomfortable feeling subsides and the nicotine buzz captivates my senses.



Tobacco Snuff, Photo by Earth Erowid



# IN THE NAME OF SCIENCE

## SMOKING WHILE DRINKING

The belief that having a couple of alcoholic drinks increases the desire for a cigarette has found experimental support in recent years. King and Epstein (2005) found that the administration of alcohol to occasional smoker-drinkers led to a dose-dependent increase in the desire to smoke.<sup>1</sup> Subjects who ingested the equivalent of two to three drinks showed an increased desire for tobacco over those who received no alcohol, and subjects who received the equivalent of four to five drinks showed a stronger desire to smoke than the other two groups. Smoking urges increased as blood alcohol content increased, and persisted as blood alcohol content declined. Epstein et al. (2007) found similar results, noting that “this effect appears to be driven by heightened stimulation levels rather than as a means to offset alcohol’s sedative effects.”<sup>2</sup>

## NICOTINE AND REINFORCEMENT

Overwhelming evidence exists that repeated and regular use of tobacco cigarettes can lead to robust dependency, driven by both the positive reinforcement associated with nicotine’s stimulation of pleasure centers in the brain<sup>3</sup> and negative reinforcement associated with aversion to unpleasant effects of withdrawal.<sup>4</sup> However, recent animal studies provide evidence that nicotine also shows complex interactions

with the brain’s reinforcement systems.

Using a technique called intracranial self-stimulation, Kenny and Markou (2006) surgically connected electrodes to the posterior lateral hypothalamus in rats.<sup>5</sup> Animals were periodically allowed to deliver a rewarding electrical stimulation to their brains by pressing a lever. A control group was compared against rats that were also allowed to self-administer nicotine. The “reward threshold”, or minimum intensity of electrical stimulation that resulted in continued pressing of the lever, was then compared for the two groups.

The authors found that nicotine-ingesting rats showed lower reward thresholds compared to control rats that did not receive nicotine. In other words, the nicotine-ingesting rats required less intense electrical stimulation to cause them to continue self-administering that stimulation. This effect lasted for more than 36 days after nicotine was discontinued.

The lowered reward threshold effect was reversed by administration of dihydro-beta-erythroidine, an antagonist that blocks nicotine’s effects, suggesting that the lowered threshold is a direct effect of the nicotine. The authors conclude that “self-administered nicotine resets the sensitivity of reward systems to a new increased level, thereby imprinting an indelible ‘memory’ of its effects in reward systems, an action that

so far appears unique to nicotine among drugs of abuse.”<sup>5</sup>

It is not immediately clear to what degree these results may be generalized, but this experiment provides evidence that not only does nicotine cause pleasurable effects for people at low doses, but it makes other stimuli seem more pleasurable than they are without nicotine. ●

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Fruity or floral snuffs usually tend to sting inside the sinuses for the first few times. Also, the nose can become a little runny and stuffed up if too much snuff is inhaled in a single sitting. Breathing through the nose is amazing after taking mentholated (also known as medicated) varieties, because it clears the upper respiratory passages and it feels like my internal air conditioning was suddenly turned on to a cool refreshing mode. I have found it my predilection to use cool snuff for everyday use, and the sweet, perfumed, aromatic snuff for special occasions and nighttime.

I’ve been a cigarette smoker for six to eight years now and have experienced negative side effects impairing my physical performance, endurance, and dexterity. Coughing in the morning, being easily exhausted, general slowness, and aversion to physical activity have constantly reminded

me that I shouldn’t smoke because it increases the risk of cancer and mid- to old-age health disorders. Ever since I started using nasal snuff, my craving to smoke has diminished by 90%. Where I would smoke half a pack to a pack of cigarettes a day, I rarely smoke more than a single cigarette anymore!

While other forms of tobacco carry their own health risks, I believe the majority of carcinogens introduced by tobacco products accompany combustion; tobacco smoke is oily and sticks to the walls of the lungs. Snuff has helped me maintain my addiction to nicotine while reducing the problematic physiological side effects of smoking. I am almost certain my dosage of nicotine has increased since I started using snuff, but I feel very comfortable with its powerful, aromatic effects, whereas I would feel endangered by health issues related to smoking. I am slowly regaining my physical

endurance and vitality, and feel that while nasal snuff can be regarded as a nasty habit, it has greatly contributed to an improvement in my health overall.

## A NEW PERSON WITH NICOTINE GUM

BY EXPERS

All my life I’ve been told how addictive cigarettes are, and how they’ll cause this or that disease. Consequently, I always avoided them during my teenage years. Around age 20 I experienced a severe heartbreak, and I made my first attempt at smoking. Immediately I felt calm and good, like everything was okay. I only smoked that one pack—I hated the way the stink accumulated on everything—and by the time I got to the end of the pack

something in me could “taste” some poison in it, which made me feel sick after even a single puff. I used cigarettes in this way in subsequent years, as an antidepressant during periods of turmoil in my life.

In the past two months I discovered nicotine gum (Nicorette). It’s everything I could have hoped for. It provides me with the buzz and calming effects, which seem to last days afterward, without any fear of major health problems or stink. It’s also much cheaper than cigarettes. I usually buy the 4 mg gum and cut it in half; not as much fun having less gum to chew, but it provides the same hit. The 2 mg gum really seems like a money-grab; they even specifically warn on the 4 mg gum package not to cut it in half, as if there’s some valid medical reason for this. I feel like it’s given me a throttle to control both mind and body energy levels. I can instantly shift gears to new highs or lows. That power has had a very “normalizing” effect on me: I’m typically a very low-energy body, high-energy brain person, which accounts for my laziness and depression (a consequence of over-thinking). The nicotine seems to slow down my mind, turning off the lingering thoughts that cause so much anxiety and depression while at the same time speeding up my body, giving me newfound stamina and strength.

I still fear addiction and tolerance. I’ve been intentionally keeping my dosage down to 2 mg in the morning, and sometimes 2 mg at night, taking days off here and there.

I’m not sure how this will work in the long run, and whether addiction is unavoidable with regular usage or not. However, I think it is a fair price to pay for this marvelous drug. Also, the nicotine gum has the added advantage that its peak hits at about the half-hour mark, as opposed to two minutes or so with a cigarette, decreasing its addictiveness and tolerance and offsetting the psychological addiction. The gum tastes neutral; there’s no sensory imprinting like with cigarettes, where I begin associating smells and tastes with the effect or with the fulfillment of craving.

I’ve found 2 mg is the best dose for me personally. I’ve tried 3 mg, which gives a better buzz, but it also causes some mild to strong nausea and lightheadedness for about an hour. And 4 mg is an amazing feeling, but the pain is not worth it for me (half an hour of extreme pain, and another half hour of mild pain), although I suppose it’s a small price to pay compared to alcohol.

I feel like a new person. I’ve always envied people who were calm and collected, and now I feel this drug has somehow given my brain what it’s needed to normalize things out. I’ve grown to love it.

## NICOTINE PATCH DREAMING

BY MONKEYBOY

I’d been informed by a friend that when she started using nicotine patches she experienced strange dreams; apparently her brain wasn’t used to the nicotine while asleep.

I’d been a smoker once but hadn’t smoked for over two years. I was taking no other medication of any sort, and was generally healthy of mind and body. I deliberately hadn’t slept for about the preceding 40 hours. I applied one 14 mg nicotine patch to my back for the purpose of investigating the effect of nicotine on dreaming. About 45 minutes later I began to experience the lightheadedness I associate with smoking and my leg began quivering, though I could control it if I chose.

By 75 minutes, I began to feel quite nauseated, dizzy, and uncomfortable. At about the 90-minute mark, my head was swimming and I was rolling around on the couch feeling very bad. The part

of my brain that warns “something’s wrong, something’s not right” was screaming just that. At about this point I felt certain I was going to vomit so I ran outside. I didn’t vomit, but I felt so bad after only an hour and a half that I ripped off the patch and threw it away. After 10 minutes outside, the queasiness began to subside. I went back in and, head still swimming, lay down. I don’t remember falling asleep.

The next thing I recall is having a conversation with someone; it was a very interesting conversation about something concrete, but I no longer remember the topic. We were speaking in two different languages—one was very fast and easy, the other “normal speech” took much more effort. We used it rarely to say only one or two significant words. After some considerable conversation, I got carried away talking excitedly for a while in the fast, easy form. I realized I had begun to lose awareness of my partner because suddenly she said, in normal speech, in a slightly amused, but friendly and warm tone, “Go to sleep”. This made me realize that I was lying on the couch about to fall asleep. With a last desperate effort I said aloud to her, “Good night”. This I actually did say out loud in the real world and doing so woke me up completely.

I felt very strange after waking. This may sound like a normal dream but two key things were very different. First, my conversation partner wasn’t present in the same way people normally are in dreams, which usually seems more akin to “images” or “ideas”. She “felt” present in the very real way people feel right next to you when you are talking to them, so much so that I felt a strong urge to look for her under the cushions after I woke. I suspect that the part of the brain that tracks the presence of other humans was active during my experience, while it’s not during normal sleep.

Second, in dreams things somehow usually follow a logical “self-based” flow with me at the center. However, my partner’s command to “go to sleep” was unexpected and felt like something outside myself that had butted in, not something generated within my own mind. I wasn’t aware that one could feel something external was intruding into one’s dream state until this happened.

The nicotine patch led to interesting dreams in which I “felt” someone else was present, but the physical reactions to the patch were awful. I don’t recommend it. ●



Nicotine Patch & Gum, Photo by Erowid

# New Additions to the Erowid Library

Several times a month we add titles to the Erowid reference library, which we use in our research. Here are just a few from the last six months. For more books about psychoactive plants and chemicals, see: [Erowid.org/books/](http://Erowid.org/books/).



## Measuring Psychedelic Experience

### An Update on Current Projects

by Matthew Baggott

I want to briefly update readers on two related projects: analyzing Erowid experience reports and developing an improved psychedelic effects questionnaire. My collaborators and I have been exploring methods of summarizing and quantifying reports in the Erowid Experience Vaults.<sup>1</sup> We hope this will help both the users of Erowid and the scientific community to understand the effects of different drugs. We have been getting useful and interesting results examining fifteen different drugs with a technique called independent components analysis. This summer, we presented preliminary results at several conferences. When people describe experiences with a given psychedelic drug, there appear to be consistent themes. Based on these themes we can estimate, for example, how euphoric or anxiety-producing a drug typically is. However, to be confident in our results, we need to compare them to existing questionnaires for measuring mood and other aspects of experience. Collecting these new data takes us to our second related project.

If we are getting people to fill out existing questionnaires about psychedelic experiences, we have a valuable opportunity to try to improve the questionnaires. The questionnaire most commonly used in European psychedelic research is the APZOAV, which measures feelings of “oceanic boundlessness”, “dread of ego dissolution”, and “visionary restructuralization”. It was developed to find the fundamental dimensions of experience that underlie nonordinary states of consciousness. However, some of these allegedly different fundamental dimensions are most obviously different only in terms of mood.

It seems possible that an individual's emotional reaction to the altered state is an independent (and in some ways superficial) aspect overlaid onto more fundamental dimensions of altered states. If this is true, then measuring mood separately could reveal new fundamental aspects about psychedelic states. We plan to test these ideas. In doing so, we hope to develop a questionnaire that more accurately measures psychedelic experience and harmonizes with leading scientific methods of measuring

mood, sociability, and mystical experience. We are calling this nascent instrument the EPEQ (pronounced “epic”), or the Erowid Psychedelic Experience Questionnaire. In June, we received approval from our Institutional Review Board to carry out this study and hope to begin soon.

Although these projects are limited in scope, we think of them as part of a larger overarching program of trying to understand psychedelic states. We hope to eventually learn the physical basis and mechanisms of psychedelic experience and how to better shape the experiences. The clinical studies where volunteers are given drugs are an important part of this program and few researchers doing this work receive much attention. But the real experts on psychedelics are the users. If we succeed in understanding psychedelics, it will be the result of projects such as the two described here—projects that collect and make available the knowledge and experiences of psychedelic users. ●

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# *Psychotria viridis* vs. *Mimosa tenuiflora* in Ayahuasca

**Q** I am interested in ayahuasca and I am wondering what the differences are between using *Psychotria viridis* and *Mimosa tenuiflora* (= *M. hostilis*) in brew preparations. Most of the experiences posted on the Erowid site seem to be by those who used *M. tenuiflora*. Can you tell me what the differences are between these two plants as ayahuasca ingredients?

**A** Both *P. viridis* leaves and *M. tenuiflora* root bark (“MTRB” in analogy with the commonly used “MHRB” for “*Mimosa hostilis* root bark”) contain the entheogenic principle N,N-dimethyltryptamine (DMT). Published analyses of the DMT content in *P. viridis* leaves have reported between 0.0% and 0.34% DMT,<sup>1</sup> while analyses of MTRB have found a DMT range from 1% to 11%.<sup>2</sup> Neither plant has yet been found to contain 5-HO-DMT (bufotenine) or 5-MeO-DMT, two psychoactive substances

that often accompany DMT in tryptamine-containing plants but have distinct effects. At first glance, one might expect the effects of ayahuasca analogues made using these two sources of DMT to be quite similar. Experience reports on Erowid seem to bear out that there is no apparent difference in the character of the psychoactivity of brews made from *P. viridis* and *M. tenuiflora*. A likely reason that more reports describe experiences with MTRB is that it is usually less expensive per dose than *P. viridis*.

One difference between these DMT-source plants is that MTRB typically contains high levels of tannins, and therefore may induce more nausea and vomiting than *P. viridis* leaves. Some people report ingesting capsules of ground MTRB to avoid the bitter taste of the tannins, but Jonathan Ott points out that the traditional use of water extractions of MTRB does not constitute proof that the roots or their bark are themselves safe for direct consumption, since the extraction process may separate out non-water-soluble toxins.<sup>3</sup> In one example, Ott reports that a colleague experienced toxic effects from ingesting ground MTRB and no such effects after ingesting an extract of the same batch of material.

Unlike *P. viridis* and other traditional DMT sources in ayahuasca, MTRB has been reported by Ott to be orally active even without the addition of an MAO inhibitor (MAOI).<sup>2,4</sup> Ott conjectures that MTRB may contain an unknown non- $\beta$ -carboline MAOI or some other, as yet unidentified, psychoactive substance(s). *Vinho da jurema*, an entheogenic beverage used traditionally in Brazil, is prepared from a cold water extract of MTRB without the inclusion of an additional known MAOI-containing constituent. Some have

hypothesized that the beverage must have, at one point, included an MAOI-containing plant that was ultimately lost. However, Ott suggests that *vinho da jurema* may never have included an MAOI, given the oral activity of simple MTRB extracts and the lack of any solid evidence that an MAOI constituent was traditionally used.<sup>2</sup>

Indeed, in 2005, Vepsäläinen et al. reported the isolation of a novel phytoindole from the stem bark of *Mimosa tenuiflora*.<sup>5</sup> Dubbed “yuremamine”, Vepsäläinen et al. suggest this substance may be an inhibitor of MAO, which could explain the oral activity of *M. tenuiflora*, but as of October 2007 this has yet to be confirmed.<sup>6</sup> While yuremamine’s pharmacology is not yet known, Ott has reported the effects of a cold water extract of MTRB alone to be “quite distinctly visionary and pharmahuasca-DMT-like” and David Aardvark described it as being “indistinguishable from smoked DMT”.<sup>4</sup> However, not all investigators report definite oral activity from MTRB. Forays by Dale Pendell into the consumption of MTRB extracts without an additional MAOI produced only nausea, and no visionary effects.<sup>7</sup> If cold water extracts of MTRB are fully effective, Pendell questions why “a wave of ecstatic and confirmatory reports [...] have not materialized”.

Another difference between the use of *P. viridis* and MTRB is that harvesting the leaves of *P. viridis* rarely endangers the plant, while harvesting *M. tenuiflora* root bark can lead to the plant’s death. In fact, one of the goals of Vepsäläinen et al. was to demonstrate the potential usefulness of the stem bark, because of concerns that harvesting root bark may damage the plant.<sup>6</sup> Although *M. tenuiflora* stem bark has been reported to contain merely 0.03% DMT,<sup>8</sup> there are indications that these results may under-represent the amount of DMT normally present.<sup>6</sup> Analysis of additional samples from several regions is needed to better characterize the alkaloid content.



*M. tenuiflora* and *P. viridis*, Photo by Erowid

Regardless, concerns expressed by some authors about potential over-harvesting of *M. tenuiflora* may be outdated, since it appears that much of the MTRB available on the international market is either wild-harvested in a sustainable manner within its large range (it grows from Mexico to South America), or cultivated on farms specifically for resale. Maurice de Graaf of Maya Ethnobotanicals describes that, of their two suppliers, one uses a plantation and the other harvests wild *M. tenuiflora* by “selecting mature trees/bushes, digging the roots only from the sunny side, and leaving a majority of the base roots intact. A few weeks after the harvest, new shoots grow from the cut roots and the shoots are commonly cut and replanted nearby.”<sup>9</sup>

Further complicating these issues, not all *M. tenuiflora* sold in North American and European markets is correctly identified. Some of the botanical material sold as MTRB may be from an active related species, *Mimosa verrucosa*, which also has a history of traditional use in South America. According to one knowledgeable ethnobotanical vendor, a majority of what is sold on the international market as MTRB may be something else: “I know of at least five huge [MTRB growing] operations. I have obtained seed from three of these farms and none of the seed turned out to be *M. hostilis* [*tenuiflora*]. [...] There is ample speculation that it is indeed *M. verrucosa*. If my guesses are correct, this material would account for over 80% of the MTRB currently on the market in 2007.”<sup>10</sup>

Personal cultivation of traditional ayahuasca plants and adjuncts, such as *Mimosa tenuiflora*, *Psychotria viridis*, *Diplopterys cabrerana*, and *Banisteriopsis caapi*, can alleviate the above concerns, promote self-reliance, and facilitate the formation of relationships with the plants. Indeed, these issues are what prompted Jonathan Ott to write *Ayahuasca Analogues*<sup>11</sup> and K. Trout to write *Ayahuasca: Alkaloids, Plants & Analogs*.<sup>12</sup> ●

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*Entheogens (Ink on Board)*, by Ben Tolman

## Oxford English Dictionary Adds “Entheogen”

The word “entheogen”, coined in 1979 by Jeremy Bigwood, Jonathan Ott, Carl Ruck, Danny Staples, and R. Gordon Wasson, has recently been added to the English language’s most exhaustive reference book. The *Oxford English Dictionary* (OED) announced the addition of the word in its September 14, 2007 quarterly update. Other words added this quarter include sampladelic, biomimetic, and puh-leeze.

### Entheogen, *n.*

A psychoactive substance which is used in a religious ritual or to bring about a spiritual experience, typically a plant or fungal extract; (more widely) any hallucinogenic drug.

# The Absinthe Enigma

## RESURGENCE OF A LEGENDARY SPIRIT

by Lux & Fire

As products called absinthe are once again being widely marketed, absinthe has shifted from obscure historical drink to chic epicurean beverage. Named after *Artemisia absinthium* (wormwood), its defining herbal ingredient, this spirit has a reputation for producing unique effects not attributable to its alcohol content alone. These effects are commonly attributed to thujone, a psychoactive chemical in wormwood, but new arguments have been proposed claiming that traditional absinthe

contained little to no thujone. Some private and peer-reviewed research analyzing vintage bottles of absinthe and contemporary absinthe made from traditional recipes has found lower levels of thujone than expected, raising the question of whether nineteenth-century absinthe ever contained active amounts.

Major media publications such as *The New Yorker*, *The New York Times*, and *USA Today* have brought public attention to this debate. The issue of thujone content is not only of

scientific concern, but of commercial concern as well, since U.S. and European regulations set maximum values for thujone in absinthe. While some vendors emphasize high thujone levels as a selling point, others use the new theory, that absinthe originally had negligible amounts, to defend their low-thujone absinthe as authentic.

The following articles include a look at absinthe's history, the current U.S. regulatory environment, and the complicated issue of thujone in wormwood and absinthe.

Christened *la fée verte* (“the green fairy”) during the height of its popularity, absinthe beckons from the margins of well-ordered society. At the close of the nineteenth century, intellectuals, artists, libertine women, bohemians, and

businessmen would circulate through twilight streets during the “green hour” in search of its pleasures. Absinthe's history winds through legend, culture, and law, and the ceaseless controversy it engenders led absinthe historian Jad Adams to observe that,

“The green fluid accepted whatever desires were projected onto it and combined with them in an opaque, cloudy mix.”<sup>1</sup>

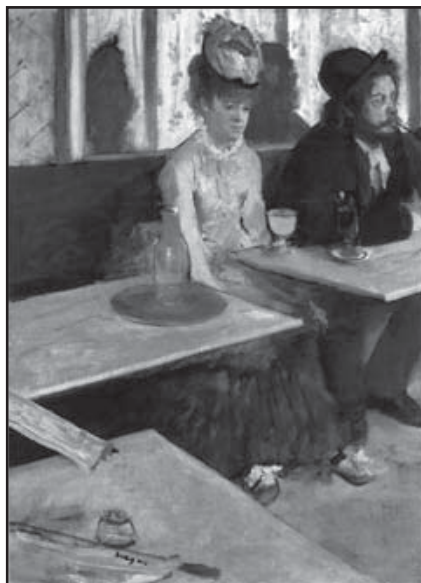
### What Is Absinthe?

Absinthe is a distilled liquor, usually containing 60–70% alcohol, infused with *Artemisia absinthium* (“grand” or “common” wormwood) and often *A. pontica* (“petite” or “roman” wormwood). These perennial herbs contain the terpenoid thujone, which can cause transient changes to attention and mood. Wormwood is extremely bitter due to the presence of absinthin, one of the most bitter substances known—one ounce mixed into 524 gallons of water can be detected by taste.<sup>2</sup> Absinthe is also often infused with other plant flavorants such as anise, fennel, hyssop, lemon balm, mint, and licorice.

In many traditional recipes, the plant material is added to grape or grain alcohol in two rounds of maceration. The first maceration extracts flavors and essential oils into the liquor. The plant-infused liquor is then typically re-distilled and macerated a second time (sometimes with a different assortment of herbs), to increase the flavor and, in some cases, provide color.<sup>3</sup> Grand wormwood is usually used during the first maceration, while petite wormwood may be used during the second.<sup>4</sup> In good quality green absinthes, the vibrant color comes entirely from plant chlorophyll. Absinthes made without a second maceration are milder in color and flavor, and are called *blanches* or *bleues* when clear or faintly blue.<sup>5</sup> Other absinthes—particularly those from Czechoslovakia—may be dyed any color, even vibrant blue or red.

### Early History

Medicinal wormwood infusions in alcohol have a long history in Europe. It has been said that wormwood-infused wine was used by the Greeks as early as 500 BCE,<sup>6</sup> but little evidence for this has been published. In the first century, the natural philosopher Pliny the Elder (23–79 CE)



*L'absinthe*, by Edgar Degas (1876)



## PARAPHERNALIA

documented the Roman use of wormwood to flavor wine, noting that the plant “is very strengthening to the stomach”.<sup>7</sup> The Greek physician Galen (131–201 CE) recommended wormwood in cases of “debility or swooning”.<sup>8</sup> Wormwood continued to be used for its medicinal properties in Europe in the fourteenth century,<sup>8</sup> particularly to settle the nerves, calm the stomach, and combat parasites.<sup>1</sup>

The modern use of wormwood in non-medicinal alcoholic beverages began in seventeenth-century Europe, when wormwood was added to an ale called “purl” and a wine called “purl-royal”.<sup>1</sup> The earliest known recipe for spirits infused with wormwood and sweetened with sugar was published in England in 1731.<sup>5</sup>

### Commercial Beginnings

Absinthe’s invention is sometimes attributed to the French physician Pierre Ordinaire, who reportedly sold wormwood elixirs in the 1790s. However, several sources claim that he obtained his recipe from Henriette Henriod of Couvet during his travels in Switzerland.<sup>1,5,6,8</sup>

Regardless, most versions of the history report that in 1797 two Henriod sisters sold their absinthe recipe to Daniel-Henri Dubied, who quickly opened what some historians describe as the first commercial absinthe distillery, with his son-in-law Henri-Louis Pernod in Switzerland. In 1805 Pernod opened another distillery, this time in Pontarlier, France,<sup>1</sup> and he went on to become one of the most prominent names in absinthe. Absinthe historian Jad Adams speculates that the attribution of absinthe’s invention to Ordinaire rather than Dubied may represent a French attempt to legitimize the drink by giving it a local origin.<sup>1</sup>

Promoted as both a medicinal remedy and an intoxicating beverage, the drink soon began to catch on; one absinthe historian reports that by 1849 the annual production in Pontarlier alone was about ten million liters.<sup>8</sup> Several factors contributed to its rise in popularity. From 1844 to 1847, the French army issued absinthe to troops as an anti-malarial agent during their campaign in Algeria.<sup>8</sup> French soldiers returned home with a taste for the drink.<sup>1</sup> An even greater boon for absinthe came in the form of a parasitic mite called phylloxera, which devastated French vineyards in the 1860s and 1870s. With wine in short supply, absinthe consumption increased.



Part of absinthe’s allure lies in the charming ceremony and paraphernalia with which it is served. Because of its strong flavor and high alcohol content, it is usually diluted with three to five parts water per one part absinthe. First, the absinthe is poured into a glass and a slotted spoon set on top. Next, a sugar cube is placed on the slotted spoon and chilled water is dripped over the cube and allowed to drain into the liquor. The addition of this sugar-water causes some absinthes to “louche”—transmuting rapidly from translucent to a milky cloudiness. Louching is caused by the precipitation of opaque terpenes, which are soluble in alcohol but not in water.<sup>21</sup> Many connoisseurs consider the character of the louche an important component of an absinthe’s quality.



The two photos above were taken by Fire and Earth Erowid when they visited Die Grüne Fee absinthe bar in Solothurn, Switzerland, in January 2006 (diegrueneffee.ch). The recent resurgence in absinthe is demonstrated by this eclectic establishment, run by Chris Heidrich and long-time psychedelic archivist Roger Liggerstorfer. A significant part of the intended attraction of the bar is the aesthetic and ritual elements involved in the careful and knowledgeable service of this historic psychoactive.

Enter the golden age of the green fairy. In Paris, absinthe became fused in popular consciousness with the decadent, avant-garde *fin-de-siècle* culture. The roster of absinthe-drinking artists in the late nineteenth century reads like a *Who’s Who* of Continental visionaries. Notable literary figures, including Charles Baudelaire, Edgar Allan Poe, Arthur Rimbaud, Paul Verlaine, and Oscar Wilde, were partial to its use.<sup>8</sup> Absinthe was popular among painters, including Edouard Manet, Edgar Degas, Paul Gauguin, and Pablo Picasso, who all created absinthe-themed works. The painter Henri de Toulouse-Lautrec is said to have carried a hollowed cane full of absinthe.<sup>8</sup> Medical historian Wilfred Arnold speculates in a frequently cited book that Van Gogh may have suffered from mental illness caused by neurotoxic levels of thujone contained in absinthe.<sup>9</sup>

However, Arnold’s theory was based on his estimates that vintage absinthes contained levels of thujone on the order of 260 mg/L, which is much higher than most current estimates.<sup>4,5</sup>

### Heading Toward the Ban

As absinthe’s popularity reached its zenith, it came under heated attack by the medical establishment in Europe. As early as 1839 some doctors argued that wormwood disrupted the nervous system,<sup>1</sup> causing delusions, convulsions, hallucinations, mental illness, and violent behavior—symptoms that together came to be called “absinthism”. Absinthism was most often blamed on the presence of wormwood in absinthe, as in the 1865 edition of the *Dictionnaire de Médecine*, which warns, “The poisonous and inebriating effects produced in those who drink the liqueur of



absinth [...] is undoubtedly due more to the plant than to the alcohol.”<sup>7,10</sup>

Contemporary journal articles have cast doubt on wormwood as the cause of absinthism.<sup>4,5,11,12</sup> Some neurotoxic effects associated with absinthe drinking may have been caused by the addition of copper sulfate or antimony chloride as coloring agents. This problem was correctly identified as

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**“Absinthe drunk on a winter evening lights up in green the smokey soul; and the flowers on the darling one exude perfume before the green fire.”**

—from “Lendemain”, by Charles Cros

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early as 1906, when a study published in *The Medical Journal* warned, “The coloring matters used in absinthe are often very deleterious; in fact not infrequently copper salts have been used in order to produce the green color.”<sup>13</sup> Symptoms attributed to absinthism may even have resulted from the inclusion of other plants used as flavoring agents such as calamus (*Acorus calamus*) or nutmeg (*Myristica fragrans*).<sup>5,12</sup>

While nineteenth-century animal experiments suggested that absinthe was more toxic than alcohol alone, recent analyses of these experiments have found them poorly designed and inconclusive by contemporary standards.<sup>5,14,15</sup> Some researchers argue that absinthism was effectively another name for chronic alcoholism, which was not well understood at the time.<sup>5,11,12,16</sup>

Its popularity, high profile, and heavy alcohol content made absinthe an easy target for the burgeoning temperance movement. Political conservatives, who associated absinthe with a cosmopolitan culture they rejected, joined forces with prohibitionists to decry it. Nevertheless, the drink had its defenders. For example, Edmond Couleru argued on behalf of the Pontarlier absinthe establishment that the social and medical problems associated with absinthe use were caused by poor-quality absinthes, and that reputable labels were safe.<sup>8</sup>

Popular opinion was decisively marshaled following a shocking absinthe-related murder in 1905. After drinking two glasses of absinthe, Swiss vineyard worker Jean Lanfray killed his pregnant wife and two daughters. On returning to sobriety he reportedly cried out, “It is not me who did this. Please tell me, Oh

God, that I have not done this”, implying to many that he was not in control of his actions.<sup>1</sup> The following Sunday, the mayor of Lanfray’s town proclaimed that, “Absinthe is the principal cause of a series of bloody crimes in our country”, and helped organize a petition to ban the drink that raised 82,000 signatures.<sup>1</sup> The story was widely carried with sensational headlines around the world; few of the articles mentioned that in addition to two glasses of absinthe, Lanfray had also drunk cognac, several cordials, and more than two liters of wine the same day.

Belgium had banned absinthe earlier in 1905, and many other European countries soon followed suit: Switzerland in 1908, Italy in 1913, France in 1915, and Germany in 1923. In 1912, the United States Department of Agriculture issued Food Inspection Decision 147 barring the importation or inter-state sale of absinthe. Some European countries such as Spain, Portugal, and the United Kingdom never banned it, though consumption all but disappeared once other countries ceased exporting.

### The Absinthe Renaissance

Absinthe entered a seventy-year period of limited commercial production away from the public eye. Over time the fervor against it faded, as fears of its toxicity and its reputation for causing violence were forgotten in favor of growing legends regarding its supposed hallucinogenic effects.

The modern-day absinthe revival began in 1988 when the European Economic Community issued directive 88/388/EEC, which set maximum legal levels of thujone in beverages sold in EEC member states: 5 mg/kg in alcoholic beverages with up to 25% alcohol, 10 mg/kg in alcoholic beverages with more than 25% alcohol, and 35 mg/kg in bitters.<sup>17</sup> Also in 1988, France issued Decree 88-1024, which fell short of repealing the 1915 ban but specified that drinks could be sold within France if they complied with the EEC directive on thujone and were labeled as spirits or bitters of wormwood rather than as “absinthe”.

In 1990, following the collapse of the Soviet Union, Radomil Hill restarted his family’s distilling business in Czechoslovakia.<sup>18</sup> Based on the recipes of his father, who reportedly produced absinthe as early as 1920, Radomil began marketing Hill’s Absinthe in 1994. In 1998, several British entrepreneurs formed a company called Green Bohemia and began importing Hill’s into the United Kingdom.<sup>19</sup> By 2005, bans were repealed in Belgium, the Netherlands, and Switzerland.<sup>20</sup> Throughout most of the European Union, absinthe with limited thujone content was now legal. The regulatory status of absinthe, wormwood, and thujone in the United States is more complex, but several low-thujone brands of absinthe are approved for sale.

With its resurgence in Europe and the United States, an absinthe renaissance is fully underway. It has returned to its cult status as a drink of the avant-garde, popular with young adults, musicians, and actors. Passionate aficionados argue, recommend, and critique available products on dozens of absinthe-themed websites. Connoisseurs are fiercely loyal to brands, methods, regions of production, and subtle nuances of taste. Lesser brands are regularly blasted as inauthentic or possibly dangerous. A fine absinthe is a complex drink, with an equally complex history, and many are delighted by the green fairy’s return. ●



Absinthe Bottles, by Erowid





# Absinthe in the United States?

In 2007, several products labeled “absinthe”, made with *Artemisia absinthium*, have been approved for sale in the United States. And yet, absinthe was “banned” in 1912 and no recent laws have been passed making it legal. Administrative interpretations of a complex set of existing laws regulating wormwood and thujone do permit low-thujone absinthe made following traditional recipes to be imported and sold. In fact, at least one brand of absinthe has been distributed in the United States for more than a decade, though it is not made with the traditional *Artemisia* species.

Wormwood products not intended for human consumption—such as live plants, essential oils, incenses, and resins—are unregulated, and neither wormwood nor thujone is scheduled as a controlled substance in the U.S. However, *Artemisia* species and thujone are governed by some regulations.

The Environmental Protection Agency lists  $\alpha$ -thujone under the Toxic Substances Control Act Inventory, which regulates the manufacture of potentially hazardous substances.<sup>22</sup> The Drug Enforcement Administration listed absinthe as a “chemical of concern” in 2006.<sup>23</sup>

Indicative of the current confusion around absinthe’s legal status is the fact that, as of October 2007, the U.S. Customs and Border Patrol website states that, “The importation of Absinthe and any other liquors or liqueurs that contain *Artemisia absinthium* is prohibited.”<sup>24</sup> This rule appears to conflict with the reality that some approved absinthes are being imported from outside of the U.S.

It is widely reported that thujone is “banned” as a food additive by the Food and Drug Administration (FDA), but thujone is not itself specifically regulated by the FDA. Thujone is only regulated in the context of five herbs, which are approved as food additives when the finished product is “thujone free”.<sup>25</sup> These approved herbs are: *Artemisia* spp (wormwood), *Thuja occidentalis* (white cedar), *Evernia prunastri* (oak moss), *Tanacetum vulgare* (tansy), and *Achillea millefolium* (yarrow). Other herbs that contain thujone are FDA-approved yet have no such restriction. Several

approved sage species including the common spice *Salvia officinalis* may contain higher thujone quantities than wormwood,<sup>16</sup> but are listed by the FDA as *Generally Recognized as Safe* (GRAS), and FDA regulations do not acknowledge their thujone content.

In September 2007, Erowid contacted the FDA to request information about its understanding of what regulations govern the thujone content of absinthe. An FDA spokesperson replied, pointing out the “thujone free” requirement of Title 21 of the U.S. Code, and stated that “FDA regulations do not specify an allowable amount [of thujone].”<sup>26</sup> Title 21 identifies the test that must be used to show that samples submitted for approval are thujone free. The official procedure is described in section 9.129 of the *Official Methods of Analysis of the Association of Official Analytical Chemists*. Surprisingly, this procedure is not a modern quantitative analysis, but rather an outdated indicator test in which a sample of the product is distilled and reacted with various chemicals so that color and odor identify the presence of thujone. Samples

resulting in a “raspberry red” precipitate supposedly show the presence of thujone, while negative samples appear similar to alcohol precipitate “from apple jelly or other light colored fruit”.<sup>27</sup> Although this test was criticized as imprecise as early as 1936 by an FDA analyst,<sup>28</sup> it appears that the code governing thujone detection has not been updated to reflect advances in analytical chemistry.

The Alcohol and Tobacco Tax and Trade Bureau (TTB), which has regulated alcohol-containing products in the United States since 2002, says on its website that natural flavorings used in alcoholic beverages must comply with FDA regulations. Using wormwood as the example, it states that finished products must be thujone free.<sup>29</sup> However, when contacted by Erowid, the TTB Press Office explained that “the term ‘thujone free’ [...] means less than the limit of detection of the specified method which is, in this case, 10 ppm. TTB will approve Certificates of Label Approval (COLA)

for products that contain thujone if they contain less than 10 ppm of thujone”.<sup>30</sup> The TTB’s regulatory interpretation has allowed at least four wormwood-containing absinthes to gain approval for sale in the United States this year.<sup>31</sup>

Amid much media coverage, Viridian Spirits first began marketing TTB-approved Lucid Absinthe in May 2007, boasting that they use traditional methods and include “a full measure of Grande Wormwood”. Viridian Spirits has stated that, “Because Lucid is made with real Grande Wormwood (*Artemisia absinthium*), it contains some thujone in an amount less than 10 parts per million. This meets U.S. requirements, which consider anything less than 10 ppm to be ‘thujone free’.”<sup>32</sup>

In stark contradiction to previous understandings of the thujone content of absinthe, some scientists and connoisseurs have recently argued that 10 ppm thujone is higher than most authentic

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**The TTB’s regulatory interpretation has allowed at least four wormwood-containing absinthes to gain approval for sale in the U.S. this year.**

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absinthes. Ted Breaux of Viridian Spirits reported to the media that he analyzed several samples of vintage absinthe as well as absinthe he made using vintage recipes and found very low thujone levels. Given these findings, he told *The New York Times* that producing absinthe that conforms to European and U.S. thujone regulations would be fairly easy.<sup>31</sup> However, neither Breaux’s methodology nor his findings have been published in a peer-reviewed journal or popular publication and are not available online despite claims to the contrary in recent articles.

Breaux argues that high-thujone absinthes are inauthentic, pointless, and possibly dangerous, and that, “If you make absinthe the way you’re supposed to, it’s not even there.”<sup>3</sup> But of course his controversial claims, which contradict 150 years of scholarship, provide direct benefit to vendors who are at pains to persuade consumers that “thujone free” absinthe is the genuine article. ●



# The Debate About Wormwood and Thujone Psychoactivity

Wormwood refers to several plant species in the genus *Artemisia* (family Compositae), especially *A. absinthium*, a small, shrubby bush 50–100 cm (2–4 feet) tall with greenish-gray leaves and a pungent, acrid smell. Wormwood has been used medicinally and as a pesticide for thousands of years, while its use as a key ingredient in absinthe has ensured it a place in modern lore. Despite its infamy, debate continues about whether wormwood or the thujone it contains cause distinct mind-altering effects.

## Is Wormwood Psychoactive?

In recent years wormwood has been described as psychoactive when smoked<sup>16,21,34</sup> or brewed as a tea,<sup>21</sup> and Erowid has published dozens of reports of such experiences.<sup>35</sup> It has been reported to cause mild changes in attention, mood, and visual perception lasting from thirty minutes to a few hours. A feeling of warmth in the body and a distracted, spaced-out feeling that is sometimes compared to the effects of cannabis are commonly reported in Erowid

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**While  $\beta$ -thujone usually occurs in greater concentrations in *A. absinthium*, the higher-potency  $\alpha$ -thujone is regarded as the primary psychoactive agent.**

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experience reports. One author who smoked a homemade wormwood resin writes, “The world around [me] became crystal clear. Clear and real in a very surreal way [...]. Everything appeared clean, and perfect, and I began to feel as if I were inside a doll house.”<sup>35</sup>

A person who drank wormwood tea reports, “My peripheral vision seems more like normal vision, like where I’m not looking, I am looking. I can feel a fuzzy warm feeling around my body, not inside, but around me, like a hazy glow has formed. My vision also has a fuzziness to it, but I can see quite clearly.”<sup>35</sup> Despite evidence that wormwood is psychoactive, its use outside

of absinthe liquors does not generally appear to inspire much enthusiasm.

Wormwood preparations—particularly oils and resins of unknown quality and concentration—can be dangerous. Weisbord et al. describe a 31-year-old male who drank approximately 10 ml of wormwood essential oil ordered over the Internet, having apparently confused it for absinthe. The patient suffered a near-fatal case of acute renal failure.<sup>36</sup> Erowid has published a similar report of a person who ingested wormwood oil, underwent convulsions, and was hospitalized.<sup>35</sup>

The psychoactivity of wormwood is thought to be caused by two terpenoid ketones,  $\alpha$ -thujone and  $\beta$ -thujone,<sup>4,37</sup> and although these are commonly referred to in aggregate as “thujone”, they differ in potency and toxicity. Thujone occurs in plants from several genera and is named for the plant species *Thuja occidentalis*, from which it was first isolated.<sup>16</sup> Thujone concentrations in essential oils vary significantly between species, strains, and individual plants.

In 2007, Lachenmeier and Nathan-Maister reviewed 29 analyses of the essential oils of *A. absinthium* and *A. pontica* leaves and flowers, the two species most commonly used in absinthe. They found wide variations in both oil content and thujone concentrations.<sup>4</sup> In *A. absinthium* they found an average of 0.6% essential oil ( $\pm 0.3\%$ ), which contained a mean of 5.8%  $\alpha$ -thujone ( $\pm 11.4\%$ ) and 12.5%  $\beta$ -thujone ( $\pm 15.2\%$ ), corresponding to a total combined  $\alpha$ - and  $\beta$ -thujone content of about 1 mg per gram of dried *A. absinthium*. In *A. pontica* they found a mean essential oil content of 0.3% ( $\pm 0.1\%$ ), and the essential oil was composed of a mean of 15.4%  $\alpha$ -thujone ( $\pm 12.0\%$ ) and 1.5%  $\beta$ -thujone ( $\pm 12.7\%$ ), corresponding to a total combined thujone content of around 0.5mg per dried gram. Some specimens of *A. absinthium* contained up to 2.5 mg of thujone per gram, while some harvested in

France, Spain, and Egypt contained none.<sup>4</sup> Other research has shown substantially higher thujone levels, up to 4.8 mg of thujone per dried gram of *A. absinthium*.<sup>13</sup> While  $\beta$ -thujone usually occurs in greater concentrations in *A. absinthium*, the higher-potency  $\alpha$ -thujone is regarded as the primary psychoactive agent.<sup>14</sup>

## Thujone’s Biological Mechanisms

The mechanisms behind thujone’s psychoactivity are not well understood. In 1975, del Castillo et al. observed that thujone shows structural similarities to tetrahydrocannabinol (THC) and speculated that it might act on cannabinoid receptors in the brain.<sup>38</sup> In 1993, Ott pointed out that thujone lacks the hydrocarbon-side chain of THC that binds to the cannabinoid receptor. A few years later, Meschler et al. experimentally confirmed that thujone displays only a low affinity for cannabinoid receptors, effectively putting the cannabinoid theory of thujone’s action to rest.<sup>39</sup>

In 2004, Deiml et al., using human cells *in vitro*, demonstrated that  $\alpha$ -thujone indirectly reduces serotonin 5-HT<sub>3</sub> receptor activity, but whether or not this is a primary mechanism of  $\alpha$ -thujone’s psychoactive effects remains unclear.<sup>40</sup>

At high enough doses,  $\alpha$ -thujone is known to exert convulsant effects by modulating GABA<sub>A</sub> receptor activity, functioning as a non-competitive antagonist.<sup>41</sup> Interestingly, ethanol appears to counteract the GABA-modulatory action of  $\alpha$ -thujone by enhancing neuronal GABA<sub>A</sub> receptor functions.<sup>41</sup> In 2000, Höld et al. found that injecting mice with ethanol blocked the toxic effects of a fatal dose of  $\alpha$ -thujone, as did administration of diazepam and phenobarbital—substances which, like ethanol, are GABA agonists. The alcohol in absinthe may therefore partially protect against the toxic effects of wormwood.

The inhibition of GABA<sub>A</sub> receptors by  $\alpha$ -thujone may contribute to wormwood’s psychoactive effects, particularly when co-administered with alcohol, as in absinthe. Höld et al. note that while



thujone inhibits GABA<sub>A</sub> receptor function, alcohol enhances it. High levels of thujone in absinthe (around 260 mg/L) would create “a detectable to major inhibitory effect beyond that of the ethanol content”. In 2004, Dettling et al. also found evidence that thujone temporarily counteracts the anxiety-reducing effects of alcohol in humans (see below).<sup>14</sup> The authors speculated that this may be due to  $\alpha$ -thujone’s GABA action, as GABA<sub>A</sub> antagonism has been shown to increase stimulation and fear. This provides more evidence that thujone, alcohol, and GABA in the brain may produce a unique pharmacological interaction, and that absinthe’s effects are distinct from alcohol intoxication alone.

### Is Wormwood a Psychedelic?

Wormwood and absinthe are sometimes described as “hallucinogenic”, but there is little evidence that they are psychedelics in any reasonable sense of the word. Recent reports of smoking or drinking wormwood infusions sometimes describe a vivid or dreamlike quality to perception such as the “doll house effect” described above, but rarely frank hallucinations or the kinds of visual distortions associated with psychedelics.

The idea that wormwood is hallucinogenic may be based in part on accounts of absinthism. Hallucination was a commonly described symptom of absinthism in medical journals,<sup>5</sup> though it would likely be described as delirium today. In 1912, the French physician Valentin Magnan, an influential proponent of absinthism as a distinct condition, wrote: “[Alcoholic delirium] is characterized by hallucination almost always of a distressing kind [...] Is the patient given to absinthe? Then the symptomatology is different. In Absinthism the hallucination insanity is more active, more terrifying, sometimes provoking most dangerous reactions of extreme violence [...]”<sup>42</sup> Magnan’s differentiation between alcoholism and absinthism was criticized at the time and has been more recently dismissed as insufficient.<sup>5</sup>

Wormwood’s reputation was reinforced by exaggerated fictional accounts of absinthe’s effects. Marie Corelli’s widely-read 1890 novel *Wormwood: A Drama of Paris*, colorfully describes an absinthe experience: “I drank till the solid walls of my own room, when at last I found

myself there, appeared to me like transparent glass shot through with emerald flame. Surrounded on all sides by phantoms,—beautiful, hideous, angelic, devilish [...]”<sup>43</sup> Absinthe historian Phil Baker aptly describes Corelli’s book as, “sublimely over-the-top”,<sup>6</sup> and it is generally accepted that her descriptions of absinthe intoxication are fanciful.

However, not all accounts of absinthe’s hallucinogenic effects can be easily dismissed. Absinthe historian Jad Adams argues that black market absinthes containing high amounts of thujone may be capable of causing hallucinations.<sup>44</sup> He finds support in Oscar Wilde’s writings on absinthe, “The first stage is like ordinary drinking, the second when you begin to see monstrous and cruel things, but if you can persevere you will enter in upon a third stage where you will see things that you want to see, wonderful and curious things.” This may be another example of artistic license, but Wilde, unlike Corelli, was an enthusiastic fan of the drink.

Despite a lack of solid evidence, some absinthe vendors claim, apparently as a marketing technique, that wormwood has psychedelic effects. One online vendor reports that “it is the ‘thujone’ in wormwood that gives absinthe its hallucinogenic properties.”<sup>45</sup> Another vendor claims: “The higher the Thujone level the stronger the psychedelic effect.”<sup>46</sup> These claims continue a tradition of promoting the drink’s decadence and danger to lend it allure. As Phil Baker notes, “People *want* absinthe to be fearful stuff, with the distinctive form of pleasure that fearful things bring”.<sup>1</sup> In 1998, *The Daily Mirror* compared absinthe to vodka, cannabis, and LSD combined. A British importer, Tom Hodgkinson of Green Bohemia, is said to have responded, “You can’t buy that kind of publicity”.<sup>6</sup> He elsewhere noted, “For me, one of the principle attractions of absinthe is that by drinking it, one is cocking a snook at New Labour’s nanny culture.”<sup>1</sup>

Other vendors and enthusiasts are equally intent on *denying* that wormwood has psychedelic effects. The Wormwood Society’s website states “[Absinthe] won’t



*Artemisia absinthium*, Photo by Erowid

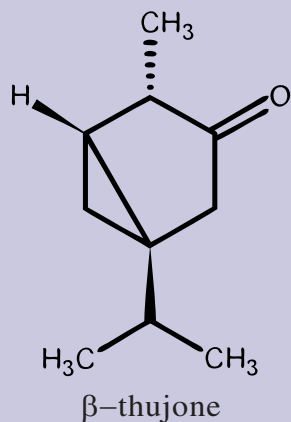
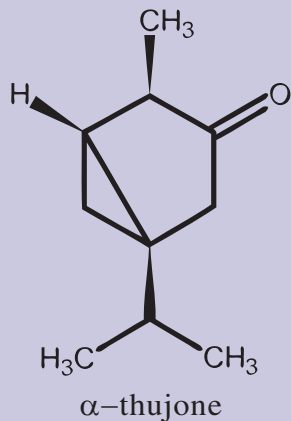
make you ‘trip’, hallucinate, cut your ear off, or anything else you wouldn’t ordinarily do when intoxicated with liquor.”

### Is Absinthe Uniquely Psychoactive?

There is currently little research on the effects of thujone in alcoholic beverages. As previously noted, there is some evidence that interactions between ethanol and  $\alpha$ -thujone in absinthe may produce inebriation qualitatively different from the effects of ethanol alone. However, it is still a matter of debate whether a psychoactive dose of thujone is contained in most absinthes.

Dettling et al. performed a controlled study measuring the influence of  $\alpha$ -thujone in alcohol on mood and attention in humans. Twenty-five subjects were administered either alcohol alone or alcohol with a 10 or 100 mg/L dose of  $\alpha$ -thujone, yielding blood alcohol concentrations of about 0.05%. Subjects given the highest thujone dose demonstrated a small but detectable decrease in peripheral attention and experienced a decrease in the anxiety-reducing effect of alcohol, but no other effects were observed.<sup>14</sup> To date, this is the most concrete supporting evidence for thujone’s psychoactivity.

Additionally, Matthew Baggott, researcher and author of *The Absinthe FAQ*,<sup>15</sup> notes that animal experiments with thujone suggest that with recurring use, “Small ineffective doses may accumulate in the body to the point of having psychoactive and toxic effects. If this is the case, it validates absinthe’s reputation for producing an unusual intoxication.”<sup>15</sup> Nonetheless, he concludes that this theory is speculative and observes that for now, “it seems reasonable to take reports of absinthe’s uniqueness with skepticism.”



### Debate over Thujone Content

European Union regulations permit a maximum of 35 mg/L thujone in the strongest absinthe bitters,<sup>17</sup> an amount that falls between the 10 mg/L that Dettling et al. found produced insignificant effects and the 100 mg/L that produced statistically significant effects. However, many modern commercial absinthes contain less than the EU maximum. In 2005, Lachenmeier et al. measured the thujone content in a number of modern commercial absinthes and reviewed three additional studies.<sup>12</sup> Of the 147 bottles analyzed by various authors, 115 (78%) contained 10 mg/L thujone or less (as required by the EU for absinthe beverages containing 25% alcohol or more) and only 7 (5%) contained more than 35 mg/L.

Until recently it was believed that pre-ban or vintage absinthes contained significantly more thujone. In 1992, biochemist Wilfred Arnold published a widely-cited calculation that vintage absinthes contained around 260 mg/L.<sup>9</sup> However, this number was based on overly high estimates of the thujone content of wormwood used in absinthe production and assumed that no thujone would be lost during post-maceration distillation. Absinthe enthusiast and vendor Ted Breaux

of Viridian Spirits used gas chromatography to analyze vintage absinthes and modern absinthes made using traditional recipes. In media interviews, he reported finding very little thujone in the samples—many around 5 mg/L.<sup>3,47</sup>

Dale Pendell, author and herbalist, says that wormwood he has grown loses its potency quickly after being harvested. In an unpublished response to a *New Yorker* article about Breaux, Pendell quips, “If Mr. Breaux has no thujone in his distillate [absinthe], it is because he had no thujone in his pot [...] the wormwood must be fresh and of a good strain. Almost all of the commercially dried wormwood that I’ve tested were ‘without virtue.’”<sup>48</sup> Lachenmeier agrees that age reduces thujone content, saying, “Based on anecdotal evidence from personal communications with absinthe distillers, there appears to be an inverse correlation between length of drying time of the wormwood and the amount of thujone in the final distillate.”<sup>4</sup>

Breaux’s widely-publicized findings were never published; however one peer-reviewed paper had similar findings. Lachenmeier et al. made three batches of absinthe according to select nineteenth-century recipes and analyzed the result with gas chromatography/mass spectroscopy. They found extremely low thujone concentrations, with maximum  $\alpha$ - and  $\beta$ - thujone levels of 0.8 and 4.3 mg/L respectively. As previously noted, thujone levels in wormwood essential oils vary dramatically between different plants. Unfortunately, Lachenmeier et al. did not report the thujone content of the wormwood they used, and their ingredient plants likely contained low concentrations of thujone.

The authors also analyzed one old bottle of absinthe, a circa 1930 Pernod Tarragona produced in Spain after most of Europe banned absinthe. It contained 0.5 mg/L  $\alpha$ -thujone and 1.3 mg/L  $\beta$ -thujone—far less than the 260 mg/L predicted by Arnold in 1992 and less than was found to produce statistically significant behavioral differences by Dettling et al. in 2004. The thujone content of the 1930 absinthe may have decreased over time. The authors attempted to assess the influence of aging on thujone and found that  $\beta$ -thujone degrades rapidly under exposure to UV light. While

$\alpha$ -thujone appeared to be more stable, its behavior over the course of decades is unknown.

New yet-to-be-published research by Lachenmeier, Nathan-Maister, and Breaux reportedly examines more than ten vintage bottles of absinthe and finds substantially higher levels of thujone than previously reported by Breaux or Lachenmeier,<sup>49</sup> but still far lower than Arnold’s 260 mg/L.

A separate lab also found very different results reproducing traditional recipes. In 2006, Gimpel et al. made absinthe with three Swiss recipes, documenting the thujone content of the *Artemisia absinthium* they used as well as of the finished products. They found that the thujone content of dried wormwood declines over time. They also showed a wide variation in the thujone content of plants tested—from “less than 0.1 to 4.8 mg per gram of dried herb”.<sup>13</sup> Using wormwood that had been dried less than four months, they produced absinthe containing between 61 and 101 mg/L thujone. Their absinthes, unlike those tested by Breaux and Lachenmeier, reached the level shown in the Dettling paper to be psychoactive.

In 2007, Lachenmeier and Nathan-Maister rejected Gimpel’s higher thujone findings, arguing that they were based on non-traditional absinthe recipes. Their primary criticism was that Gimpel used *Artemisia absinthium* in the second maceration instead of *A. pontica*.

Lachenmeier and Nathan-Maister, who express a preference for less bitter, clear absinthes, consider high-thujone absinthes

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**[...] what [researchers] actually show is that the thujone content of absinthe depends greatly on the specific type of wormwood used.**

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to be “unauthentic”. However, a bias is revealed in their statement that one of the types of wormwood they used is “obviously thujone-free and, therefore, ideally suited to produce absinthe with wormwood quantities on the basis of the traditional recipes, without the producer facing the risk of exceeding the thujone limit.” There is no indication that a traditional absinthe producer would have used contemporary thujone restrictions as a criteria in selecting wormwood.



Lachenmeier and Nathan-Maister provide an estimate of 0 to 76 mg/L of thujone in absinthe based on three factors: the thujone content of wormwood found in their literature review, their estimate of the percentage of thujone surviving the production process, and the varying amounts of wormwood used in the traditional absinthe recipes they selected. However, *mean* thujone content of wormwood samples from around the world may have little to do with the thujone content of wormwood used in vintage absinthes.

The disagreement between Lachenmaier and Gimpel highlights a crucial variable in absinthe research. While Lachenmaier and Nathan-Maister set out to show that traditional absinthes have lower levels of thujone than previously thought, what they actually show is that the thujone content of absinthe depends greatly on the specific type of wormwood used. Low-thujone-content wormwood will result in low-thujone-content absinthe. Over the last several hundred years a wide range of beverages have been called “absinthe”, ranging from commercially-made alcohols sold by large distilleries to quasi-medicinal elixirs to homemade liquors. Some “absinthes” are little more than high-ethanol moonshine with wormwood and anise soaked in it for a few days or fortified with essential oil of wormwood. The results of absinthe analyses depend greatly on what recipe, thujone source, and production methods are chosen by the researchers.

The question of what constitutes an “authentic” absinthe is a matter of debate. Connoisseurs frequently argue about whether or not brightly-dyed Czech absinthes should be considered authentic, or whether an absinthe made using southern wormwood (*A. abrotanum*) is worthy of the name. Such debates become of scientific concern when they determine which absinthes should be included in analytical samples. Whether or not nineteenth-century absinthe contained much thujone is complicated by the fact that there are currently companies and individuals with financial interest in finding that “authentic” absinthe is low in thujone.

Many basic questions regarding wormwood and its role in our culture have yet to be decisively answered. Clear answers can only come from further research—particularly experimental investigations of the psychopharmacology of thujone in humans. ●

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# The Virtual World in a Real Book

New Sociology/Criminology Title Discusses Erowid

by Fire Erowid

In the June 2007 issue of *Erowid Extracts*, we published “Drug Web Cites”, an article describing how Erowid has been referenced and discussed in print literature. Just as that issue went to press, we received a copy of the new book *Real Drugs in a Virtual World*, an anthology of sociology articles that look at how online technologies impact the lives of drug users.<sup>1</sup> It addresses issues such as how harm reduction websites, including Erowid, affect the use of club drugs, how drug information websites are utilized by drug-using subcultures, how individuals assess the accuracy of online drug information, and the impact of the internet on face-to-face conversations about drug use.

The book was written and edited by a group of professors and researchers led by Edward Murguía at Texas A&M University. In 2001, the National Institute on Drug Abuse (NIDA) sent out a Request for Applications (RFA) to study raves and

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**“[...] Erowid’s fact-checking editorial process probably makes their information more accurate.”**

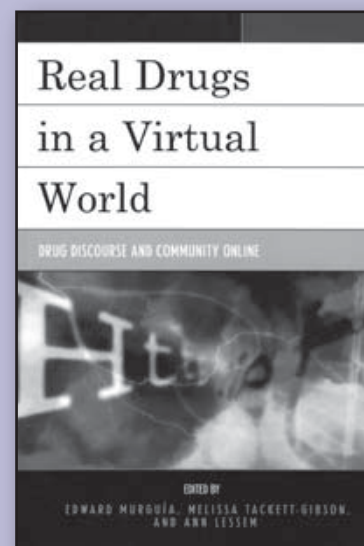
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the use of “club drugs”. Murguía and co-author Melissa Tackett-Gibson thought it would be an interesting topic to study via the internet. They gathered a team of researchers and writers with expertise in related fields, including causal factors of drug use (Edward Murguía), the internet (Melissa Tackett-Gibson), internet and community (Sarah Gatson), raves (Joseph Kotarba), and music and drug use (Shawn Halbert), among others. The team wrote an application, submitted it to NIDA, and received a grant (\$100,000 a year for two years with an additional \$45,500 a year for two years to Texas A&M for housing the project) to study issues related to drug use, raves, and the internet.

Earth and I met Murguía in June 2002, when we participated in the small NIDA-sponsored conference *Drugs, Youth and the Internet*.<sup>2</sup> Many of the non-NIDA-affiliated attendees at the conference were other researchers who had received funding under the same RFA. Murguía et al. give the topic a surprisingly fair treatment. They look seriously at a number of issues and report their findings without being driven by political concerns. We were very interested, as we skimmed the book, to see how central Erowid is to several chapters.

In “Causal Factors in Drug Use” Murguía discusses various theoretical models for what causes drug use and then compares them to a harm reduction site forum thread that specifically addressed why those reading the thread used drugs. Reasons given fell into six categories (ordered from negative to positive context): to satisfy an addiction, for self-medication, to avoid problematic reality, for happiness and pleasure, for friendship, and for insight and inspiration. He found that the reasons provided by users mapped well to the theoretical models, while helping to develop a more complex model of drug use.

In “The New Drugs Internet Survey”, Murguía and Tackett-Gibson describe a survey conducted on an unnamed drug-related web discussion board. One of the questions they asked respondents was what type of websites they had visited in the previous six months to get information about recreational drugs. 88% of respondents selected that they had visited “drug education/harm reduction websites (e.g., DanceSafe, Bluelight, Lycaeum, Erowid)” and 84% rated such websites as “very credible”. The authors note that use of government-sponsored websites “pale[s] in comparison” to the use of drug education/harm reduction websites and comment that, “One wonders whether political constraints



## From the introduction:

“At present, there is much concern about the impact of online drug information on youth drug use. Many assume that the Internet introduces youth and young adults to dangerous information about hazardous substances. Others, on the other hand, contend that open and free access to accurate drug use information is critical to reducing dangerous behaviours and that Internet harm reduction sites provide valuable and accurate information on drugs and drug use.”

may be limiting science based information” available on government-sponsored sites. The authors go on to state that, “[...] almost all of the respondents indicate that they will consult drug education/harm reduction websites in the future. We conclude that first they have found such sites credible in the past, and, second, that it is to be hoped that drug education sites stay objective and scientific in the future, because the health and welfare of many people now depends on this being the case.”

In “Deterrence of Harm to Self”, Azzurra Crispino looks at how people choose whether or not to use illegal drugs. She begins by citing the theory that “all individuals choose to obey or violate the law by a rational calculation of the risk of pain versus potential pleasure derived from the act”, a theory that purportedly leads policy makers to create sanctions powerful enough to overcome those perceived benefits. Crispino then asks whether that

is how real people choose whether to use illegal drugs and what types of sanctions people are most concerned about, formal (legal penalties) or informal (community disapproval). She compares reports of drug use on TheAntiDrug.com with experience reports on Erowid, looking for differences in how people discuss drug use.

In reports on TheAntiDrug, “blame is put on family members, parents, and friends, but there is no discussion of *choosing* to use drugs [...]”, which downplays the role of individual choice and responsibility for outcomes. Crispino notes that TheAntiDrug did not distinguish between negative consequences directly attributable to drug use (health issues, etc.) and those that resulted from external sanctions (legal and familial). Further, they often published reports of negative consequences for which there was no evidence of a causal relationship with psychoactive drug use.

In contrast, Crispino describes that Erowid experience report authors primarily “categorized their drug use as being something they *chose* to do [...]”. Erowid authors discuss wanting to be in control of their drug use and “making sure one ingests a substance in the safest way possible.”

Crispino also compared how TheAntiDrug and Erowid handle reports of serious injury or death. While TheAntiDrug focuses heavily on such reports, generally submitted by family members, Erowid has a policy of requiring external verification or at least discussion with the submitter before assuming such second-hand reports are authentic. She states that, “TheAntiDrug’s format of letting parents and siblings discuss family members’ drug use does provide for reporting of catastrophic consequences [...]. However Erowid’s fact-checking editorial process probably makes their information more accurate.”

Crispino concludes that authors on both sites seem significantly more concerned with direct negative consequences of drug use than with either legal ramifications or societal disapproval. She proposes that drug users have already self-identified as outsiders and therefore the deterring effects of mainstream culture have little effect.

In “Assessing the Likelihood of Internet Information-Seeking Leading to Offline Drug Use by Youth”, Sarah Gatson looks at questions related to online communities. She asks how Computer Mediated Communication (CMC) affects

human communities and choices. Gatson reports that, “Beginning in September 2001 and going through June 2003, I engaged in qualitative assessment and observation of the networked counter-cultural website known as Erowid.” After describing the importance of Erowid to the online drug culture “scene”, she declares that, “Erowid places itself first and foremost at the center of a national (international) socio-cultural and legal debate about the presence, use, abuse, and legitimacy of drugs.”

In her research, Gatson visited and categorized approximately 290 sites that appear on Erowid’s reciprocal links page. She identified sites that contained direct CMC access such as mailing lists, chat rooms, or message boards, and rated each by how likely online reading was to lead to offline communication and drug use. This process was designed to identify what percentage of these reciprocal link sites seemed likely to lead online information seekers towards drug use. Though her analysis categorized half of the sites as concerning, she clearly notes that visitors were interested in illegal drugs before visiting the sites. Consequently, the biggest area of concern for parents is that recreational drug related forums may facilitate further interest and use, but do not “instigate generalized youth interest in drug use”.

It is worth noting that Gatson only looked at sites linked to from Erowid’s reciprocal links page, not sites linked to from our psychoactive communities page or from psychoactive-related vaults. At the time, links displayed elsewhere on Erowid were not replicated on the reciprocal links page.

She then selected two sites that had well-used CMC. She contacted their webmasters, described her project and her plan to participate in the forums and follow up with any face-to-face community interaction that was available. She reports that she “was met with courteous and informative responses, but not the easy follow-up in offline contact that my initial perusal of the sites—nor my own extensive online experiences—had led me to expect.”

In a later chapter, “Illegal Behavior and Legal Speech”, Gatson discusses Erowid as “an archive of a culture”. This reflects one of the ways we have envisioned our work

from the beginning: as a type of postmodern anthropology. Gatson says, “An Internet site like Erowid is itself an ethnography in that it is representative of a dispersed social group with diffuse boundaries in which its members write their own narrative of their society, as it is, and how they wish it to be.”

Although our primary role is that of cultural documentarians rather than participants of the drug-using subculture, in the modern anthropological tradition we adhere to, the validity of one’s understanding of a culture or community is based on whether one is a part of that culture or community. If there is too little connection between anthropologists, researchers, or documentarians and their subjects, the resulting research is likely to be inaccurate. Erowid was started out of our personal and academic interest in psychoactives,

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**“[...] it is to be hoped that drug education sites stay objective and scientific in the future, because the health and welfare of many people now depends on this being the case.”**

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but we are only peripherally involved in many aspects of the field. We maintain connections and involvement with a variety of communities in order to better be able to serve their needs, represent their actions and viewpoints, and act as their trusted recorders and archivists.

Considering the volume of information posted online about recreational drugs in the last decade, and the work that Erowid has done to help facilitate an improvement in quality of and access to this type of information, one of the things this book makes clear is how little scholarly attention has been paid to the impact that ubiquitously available drug information has on choices made by readers. This book and a handful of academic papers constitute the breadth of research to date examining this critical issue. We appreciate the authors dipping their toes into this topic and hope that others follow in their footsteps. ●

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# The Distillation

*The Distillation includes updates, statistics, and information that we hope will offer insight into the ongoing site additions, traffic, and projects currently underway at Erowid.*

## Summary

General Content Pages	12,439
Archived Site Pages	4,660
Experience Reports	15,211
References	6,734
Ask Erowid	548
The Erowid Review	189
Content Images	4,951
Visionary Art	1,926
Total	46,658

Erowid Files on Server	116,027
Erowid Disk Footprint	25.0 GB

Current Members	1,350
Daily Visitors	55,289

## General Content

General Content Pages	12,439
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Number of Substance Vaults	304
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### Most Popular Substance Vaults (with change)

Cannabis (↔); LSD (↔); Mushrooms (↑); MDMA (↓); Cocaine (↔); *Salvia divinorum* (↔); Morning Glory (↑); Methamphetamine (↓); DMT (↑); DXM (↓); Oxycodone (↑); Ketamine (↑); Opiates (↓); Heroin (↔); Amanitas (↑); Datura (↑); Peyote (↓); 2C-B (↓); Cacti (↑); Nitrous Oxide(↓); Amphetamine (↓); 5-MeO-DMT(↑);Ayahuasca(↓);Hydrocodone(↓);GHB(↓).

### Most Accessed Documents

Drug Testing Basics; Mushroom Effects; LSD Effects; Cannabis Effects; MDMA Effects; Salvia Effects; Cannabis Drug Testing; Cocaine Effects; Mushroom Basics; LSD Basics; Mushroom Dosage.

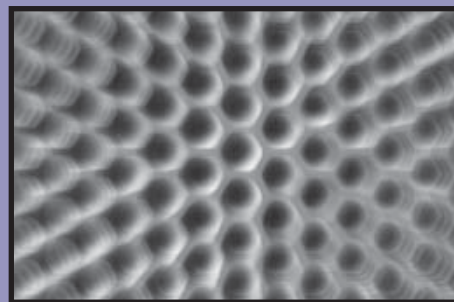
## Visionary Art



*Rapture* (Ink and Colored Pencil)  
by Trace Elements — [trace-elements.deviantart.com](http://trace-elements.deviantart.com)



*The Hypnotic Fact of the Golden Mean*  
(Acrylic on Wood)  
by Dennis Konstantin — [denniskonstantin.com](http://denniskonstantin.com)



*Looking at This Is a Unique Experience* (Digital)  
by Colorsound — [freespace.virgin.net/impludo/herries/](http://freespace.virgin.net/impludo/herries/)



Published Art Pieces	1,904
Number of Artists	521
Viewed Per Day	5,421

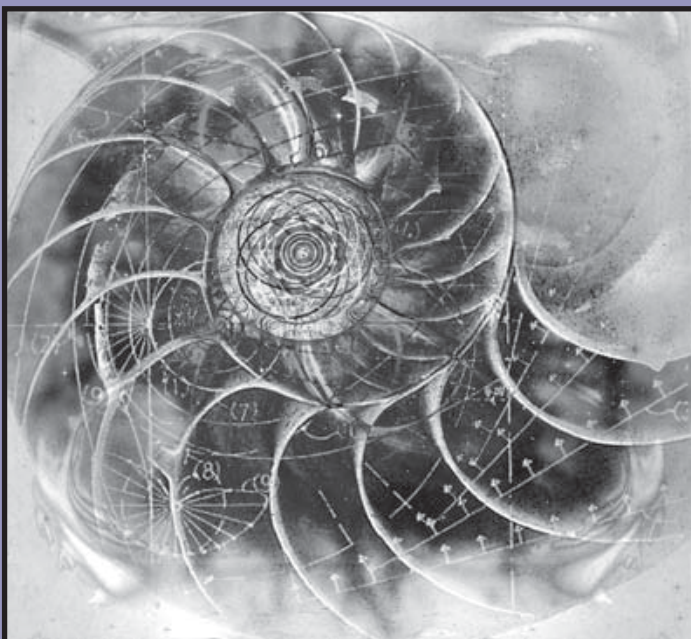
New Pieces in Last 6 Mo.	45
New Artists in Last 6 Mo.	9
Curated by Christopher Barnaby	

## Experience Reports

Published Reports	15,211
Published in Last 6 Mo.	2,343
Fully Triaged Reports	20,493
Partially Triaged Reports	1,077
Un-triaged Reports	11,222
Viewed Each Day	95,706
Submitted Each Day	23
Substances Included	420
Active Triagers/Reviewers	28



*Transgender Buddha Faces Mara* (Oil on Canvas)  
by Cody A. Seekins — codyart.tk



*Quantoomuch* (Digital)  
by yogiteam.org

## Beset by Donation Fraud

Over the past few years we've learned more about credit card processing than we ever wanted to know. Apparently, online credit card donation systems like ours offer an easy method for those engaged in fraud to check the validity of stolen credit card numbers.

In 2005, we became a target for small fraudulent donations of this type. In addition to the credit card numbers, the thief (we assume it is a single person or organization because of various patterns we can track with the "donations") appears to have access to the correct names, billing addresses, and security codes that go with them. Consequently, it is often impossible for us to distinguish fraudulent donations from real ones.

Once a card owner learns that their card has been used by a thief, they contact their credit company to cancel the card and dispute the donation to Erowid, presumably along with other charges. Erowid ends up having to pay a \$30 fee for the chargeback. Because the thief has all of the correct identifying information, the credit card company can offer no suggestions or methods by which we can protect ourselves from the nuisance and fees.

Over the past two years, the frequency of this activity has ranged from one fraudulent donation attempt every few weeks to *several dozen a day*. Sometimes the thief follows identifiable patterns. In these cases we can refuse the charges, but even this costs us 35¢ per attempted transaction. Starting near the end of September 2007, the thief began making so many attempts that we were forced to shut down our online donation system. Our only recourse at this point is to write a custom donation system from scratch, which will hopefully provide us with the needed control to make our system useless to the thief.

This has been a frustrating problem to deal with, as we depend on visitor donations. Unfortunately, vendor support provided by credit card processing companies is woefully inadequate. We apologize to those who have attempted to contribute online, only to be met by a non-functional donation system.

# Image Vaults

Published Images	4,949	Published in Last 6 Mo.	132
Image Vaults	266	Submitted Each Day	5
Viewed Per Day	62,752	Awaiting Processing	7,806

*Lophophora williamsii*, Photo by Mat



*Salvia divinorum* Flower, Photo by Fire Erowid

## Sasha's Lab Books Scanned

For several years we have been part of discussions with the Shulgins and a number of other people about the process of digitally archiving Sasha's lab books. The lab books contain detailed experience reports about a wide variety of substances as well as notes on chemical processes, formulas, sketches, and hand-drawn graphs. When funding appeared for the project, the Shulgins' trusted assistants, gregM and Tania, began the labor-intensive process of redacting the names of individuals whose privacy should be protected.

The scanning is being done by Archive.org (a prominent free-access archiving organization), which completed the first lab book in October 2007. This first volume, largely filled with early experience reports, should soon be available online through both Archive.org and Erowid, where it will be linked to from the Shulgins' Character Vaults. When the lab book scanning is complete, the files will also be available as part of the Erowid DVD archive.

We are very happy that these important books are being preserved digitally in a conscientious and careful manner, and are pleased to be able to help in small ways as the project moves forward. Congratulations and thanks go to gregM, Tania, Raj Kumar, Sasha, Ann, and others for their continued perseverance in making sure this project happens.

[Erowid.org/books\\_online/shulgin\\_labbooks/](http://Erowid.org/books_online/shulgin_labbooks/)

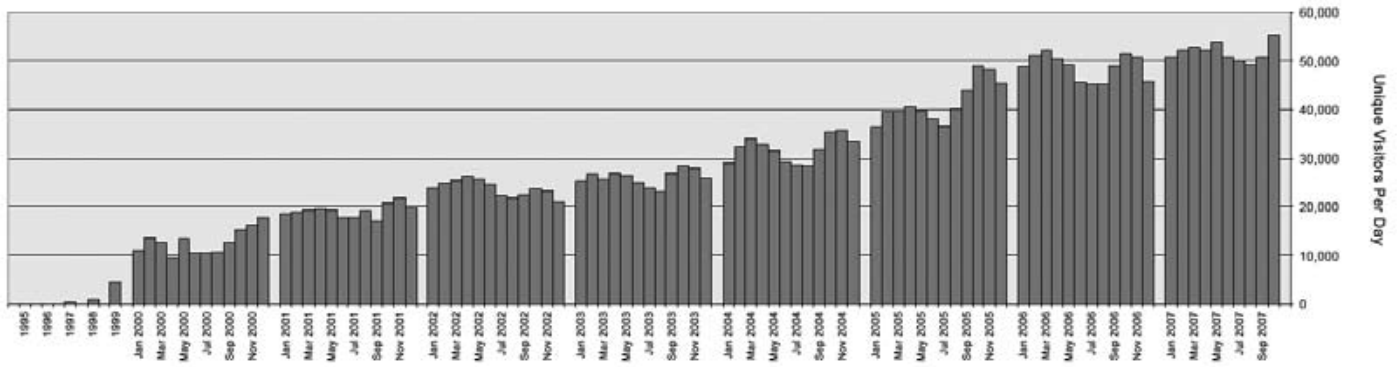
## The Erowid Review

Published Reviews	189
Published in Last 6 Mo.	20
Viewed Each Day	1517



*Methamphetamine Crystals*, Photo by Huxters

Daily Erowid Visitors (1995–2007)



### Big Small Successes

The minutiae of Experience Report reviewing are neither exciting nor sexy. Nevertheless, we thought that we would share a couple of minor milestones that have brought smiles to the faces of long-time volunteers helping with this Sysiphean project. As of the end of October, Erowid has published more than 15,000 reports describing people’s experiences with psychoactive plants and chemicals.

For several years, the number of reports waiting to be read and reviewed by Erowid crew members—reports accrued over years of daily submissions by visitors—has hovered between 12,000 and 14,000. For the first time since 2003, the number of unread reports has dipped below that, and is currently at 11,300. Five thousand reports were triaged in the last six months alone. A special thanks to all our volunteer reviewers and triagers; we’re lucky to have you!

*If you are interested in contributing time to triaging experience reports for Erowid, please visit [Erowid.org/volunteers/](http://Erowid.org/volunteers/).*

### EcstasyData Summary

<b>2007</b>	Daily Visitors	3,410	Daily Page Hits	26,097
	Tablets Tested	29	Daily File Hits	325,795

<b>BY YEAR</b>	Tablets Tested		Testing Results (1999–2007)	
	2006	30	Total Tablets Tested	1,526
	2005	133	MDMA Only	(38%) 584
	2004	151	MDMA + something	(18%) 267
	2003	148	No MDMA	(44%) 675
	2002	301	– Nothing	97
	2001	332	– Unidentified	46



### Erowid Traffic Statistics

<b>DAILY</b>	Visitors	55,289	File Hits	3,814,543
	Transfer	22.95 GB	Page Hits	444,581

<b>BY MONTH</b>		Avg Daily File Hits	Avg Daily Page Hits	Avg Daily Visitors
	Sep 2007	3,555,890	419,890	50,796
	Aug 2007	3,433,121	425,152	49,088
	Jul 2007	3,497,069	454,018	49,982
	Jun 2007	3,593,645	462,753	50,690
	May 2007	3,618,012	458,320	53,734

<b>BY YEAR</b>	2007	3,501,521	441,061	51,360
	2006	3,025,185	409,796	48,443
	2005	2,544,202	402,567	41,412
	2004	1,799,694	405,528	31,241
	2003	1,421,815	349,530	25,997
	2002	1,206,855	283,541	23,042

Membership	
Current Members	1,350
Recently Expired Members (0-6 mo.)	391
Older Expired Members (6+ mo.)	2,763
Members in U.S.	969 (72%)
Members in Other Countries	381 (28%)
Countries with Members	35
Top Membership Countries	
USA (992); Canada (82); UK (82); Australia (50); Germany (27); Netherlands (20); Norway (17); Sweden (15); France (12); Finland (8); Denmark (8); Belgium (7); Ireland (7); Switzerland (6); Spain (5); S. Africa (5); Italy (5); Mexico (4); Israel (4); Brazil (3).	

# VERBATIM

**"All is flux; nothing stays still."**

— Heraclitus (c. 535–475 BCE)

**"We cannot adopt the way of living that was satisfactory a hundred years ago. The world in which we live has changed, and we must change with it."**

— Felix Adler (1851–1933)

**"I wanted to change the world. But I have found that the only thing one can be sure of changing is oneself"**

— Aldous Huxley (1894–1963)

**"He who would reform himself must first reform society."**

— George Bernard Shaw (1856–1950)

**"Although the connections are not always obvious, personal change is inseparable from social and political change."**

— Harriet Lerner (b. 1944)

**"No person is your friend who demands your silence, or denies your right to grow."**

— Alice Walker (b. 1944)

**"Life is a process of becoming, a combination of states we have to go through. Where people fail is that they wish to elect a state and remain in it. This is a kind of death."**

— Anaïs Nin (1903–1977)

**"They say that time changes things, but you actually have to change them yourself."**

— Andy Warhol (1928–1987)

**"I am always doing that which I can not do, in order that I may learn how to do it."**

— Pablo Picasso (1881–1973)

**"If there's no dancing, count me out."**

— Emma Goldman (1869–1940)

**"Change your opinions, keep to your principles; change your leaves, keep intact your roots."**

— Victor Hugo (1802–1885)

**"A weed is no more than a flower in disguise."**

— James Russell Lowell (1819–1891)

**El mudar  
consejo es mas  
prudencia que  
ignorancia.**

**[To change one's mind is  
rather a sign of prudence  
than of ignorance.]**

— Pedro Calderon (1600-1681)

**"The moment one gives close attention to anything, even a blade of grass, it becomes a mysterious, awesome, indescribably magnificent world in itself."**

— Henry Miller (1891–1980)

**"To forget how to dig the earth and to tend the soil is to forget ourselves."**

— Mahatma Gandhi (1869–1948)

**"The sun, with all those planets revolving around it and dependent upon it, can still ripen a bunch of grapes as if it had nothing else in the universe to do."**

— Galileo Galilei (1564–1642)

**"Now there is one outstandingly important fact regarding Spaceship Earth, and that is that no instruction book came with it."**

— Buckminster Fuller (1895–1983)

**"The most beautiful thing we can experience is the mysterious. It is the source of all true art and all science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead: his eyes are closed."**

— Albert Einstein (1879–1955)

**"Every great advance in science has issued from a new audacity of the imagination."**

— John Dewey (1859–1952)

**"Science cannot resolve moral conflicts, but it can help to more accurately frame the debates about those conflicts."**

— Heinz Pagels (1939–1988)

**"One still must have chaos in one's self to be able to give birth to a dancing star."**

— Friedrich Nietzsche (1844–1900)

**"In every work of genius we recognize our own rejected thoughts: they come back to us with a certain alienated majesty. Great works of art have no more affecting lesson for us than this."**

— Ralph Waldo Emerson (1803–1882)

**"The strongest arguments prove nothing so long as the conclusions are not verified by experience. Experimental science is the queen of sciences and the goal of all speculation."**

— Roger Bacon (1214–1294)