ENTHEOGEN COMBINATION MATRIX

CURRENT AT: 19.12.2023

KEY

In this chart, 'risk' refers to danger or hazard. 'Synergy' refers to increased subjective effects (or in some cases, the creation of an additional subjective effect), while 'decrease' refers to reduced subjective effects.

Low risk & synergy	Minor risk
Low risk & no synergy	Greater risk
Low risk & decrease	Significant risk

ABOUT EGA

Entheogenesis Australis (EGA) is a charitable, educational organisation established in 2004. We provide opportunities for critical thinking and knowledge sharing on ethnobotanical plants, fungi, nature and sustainability.

We also encourage gardening and the conservation of plants, fungi and seeds that have a traditional relationship with humankind. We aim to celebrate culture, science, art, politics, and community around medicine plants through our conferences, workshops and resources. See entheogenesis.org and gardenstates.org

If you find this resource helpful, please consider supporting the work of EGA. entheogenesis.org/support

DISCLAIMER:

Avoid unsustainably produced entheogens.

This matrix cannot cover all information about entheogen combinations. We recommend Erowid, The Corroboree, Bluelight, The Shroomery and The DMT Nexus as additional sources of online harm reduction information

Entheogen combinations have many risks which are hard to measure and compare. Use this matrix alongside more information and other harm reduction supports. These supports should include a comfortable and controlled set and setting, measured dosage and trusted carers.

P. cubensis

Entheogen use is embedded in cultural contexts and should be treated with caution and respect. Ensure to understand local laws, traditions, and sustainability before working with entheogens.

This chart is the combined effort of Entheogenesis Australis and IzWoz Design.

entheogenesis.org

www.izwoz.com.au

	'Sally' *Salvia divinorum* (Salvinorum A)	'Wattle' *Acacia sp.* e.g. *Acacia acuminata* (DMT)	'Jurema' *Mimosa tenuiflora* (DMT)	'Blue meanies' *Panaelous sp.* e.g. *P. cyanescens, P.cinctulus* (Psilocybin)	'Gold tops' *Psilocybe sp.* e.g. *P. subaeruginosa, P. cubensis* (Psilocybin)	'Hawaiian baby woodrose' *Argyreia nervosa* (LSA)	'Morning glory' *Ipomoea violacea* (LSA)	'Ololiuqui' *Rivea corymbosa* (LSA)	'Fly agaric' *Amanita muscaria* (Muscimol)	'San Pedro' *Trichocereus sp.* e.g. *T. pachanoi, T. bridgesii* (Mescaline)	'Peyote' *Lophophora williamsii* (Mescaline)	'Sonoran desert toad' *Incillius alvarius* (5-MeO-DMT)	'Kratom' *Mitragyna speciosa* (Mitragynine)	'Poppies' *Papaver somniferum* (Opiates)	'Cannabis' *Cannabis indica, Cannabis sativa* (THC)	'Ayahuasca vine' *Banisteriopsis caapi* (Harmine)	'Kava kava' *Piper methysticum* (Kavalactones)	'Khat' *Catha edulis* (Cathinones)	'Ma huang' *Ephedra sinica* (Ephedrine)	'Coca leaf' *Erythroxylum coca* (Cocaine)	'Kambo' *Phyllomedusa bicolor* (Bioactive peptides)	'Iboga' *Tabernanthe iboga* (Ibogaine)
'Sally' *Salvia divinorum* (Salvinorum A)																					
'Wattle' *Acacia sp.* e.g. *Acacia acuminata* (DMT)																					
'Jurema' *Mimosa tenuiflora* (DMT)																					
'Blue meanies' *Panaelous sp.* e.g. *P. cyanescens, P.cinctulus* (Psilocybin)																					
'Gold tops' *Psilocybe sp.* e.g. *P. subaeruginosa, P. cubensis* (Psilocybin)																					
'Hawaiian baby woodrose' *Argyreia nervosa* (LSA)																					
'Morning glory' *Ipomoea violacea* (LSA)																					
'Ololiuqui' *Rivea corymbosa* (LSA)																					
'Fly agaric' *Amanita muscaria* (Muscimol)																					
'San Pedro' *Trichocereus sp.* e.g. *T. pachanoi, T. bridgesii* (Mescaline)																					
'Peyote' *Lophophora williamsii* (Mescaline)																					
'Sonoran desert toad' *Incillius alvarius* (5-MeO-DMT)																					
'Kratom' *Mitragyna speciosa* (Mitragynine)																					
'Poppies' *Papaver somniferum* (Opiates)																					
'Cannabis' *Cannabis indica, Cannabis sativa* (THC)																					
'Ayahuasca vine' *Banisteriopsis caapi* (Harmine)																					
'Kava kava' *Piper methysticum* (Kavalactones)																					
'Khat' *Catha edulis* (Cathinones)																					
'Ma huang' *Ephedra sinica* (Ephedrine)																					
'Coca leaf' *Erythroxylum coca* (Cocaine)																					
'Kambo' *Phyllomedusa bicolor* (Bioactive peptides)																					
'Iboga' *Tabernanthe iboga* (Ibogaine)																					

© Entheogenesis Australis 2023

SHORT DESCRIPTIONS OF PLANTS, ANIMALS AND FUNGI APPEARING IN THE ENTHEOGEN COMBINATION MATRIX

DISCLAIMER: These descriptions are simplified introductions and may contain errors. We aim for these descriptions to be an overview and to inspire further learning and research. We cannot accurately cover all details on all relevant genera, species, and their pharmacology in this document.

Wattle trees (Acacia species)

Acacia are a diverse genus of trees, with around 1400 different species. Almost 1000 of these Acacia species are endemic to Australia. Acacia are most easily identified by their leaf-like phyllodes, and in their flowering season by their sweet-smelling, yellow flowers. Some Acacia species are threatened in habitat, and wild harvest should be avoided.

For Australia's First Peoples, Acacia have much cultural significance, being used for fuel, food, and medicine. Acacia are used primarily as timber, although seeds are increasingly used as a flour substitute by grinding seed into powder. Some Acacia contain the psychedelic tryptamine, dimethyltryptamine (DMT).

Jurema trees (*Mimosa tenuiflora, syn. Mimosa hostilis*)

Jurema is a perennial tree endemic to Central and South America. Jurema has dark brownish-grey bark, with fern-like branches and bright green pinnate leaflets. Jurema blooms with white, loosely cylindrical flower spikes and a sweetly scented perfume.

Jurema has long been used by First Peoples of Brazil for entheogenic, medicinal, and functional purposes. Jurema contains the tryptamine, DMT, but despite traditional Jurema brews including several other plant additives, traditional oral preparations do not appear to contain an MAOI ingredient.

Ayahuasca vine (*Banisteriopsis caapi*)

Ayahuasca vine, also known as yagé, is a giant, climbing liana sacred to the First Peoples of the Amazon rainforest. Ayahuasca vines have a braided appearance, green leaves, white to pale pink flowers, and can grow incredibly long.

Ayahuasca contains harmala alkaloids including harmaline, which act in the body as a monoamine oxidase inhibitor (MAOI). Traditionally, the vine is brewed as a tea with a DMT-containing plant, chacruna (*Psychotria viridis*). Harmalas enable DMT to be orally active. Without an MAOI, DMT taken orally has no psychoactive effect. Preparations of Ayahuasca vine can be consumed without DMT and are psychoactive in their own right.

Gold top mushrooms (*Psilocybe species*)

There are over 100 different species in the Psilocybe genus. Most Psilocybe species have a hygrophanous cap, which changes from dark brown or caramel to yellow or an off-white colour as they dry. Some Psilocybe caps dry to a golden colour, hence the common name 'gold tops.' All Psilocybe produce purple-black spore prints. Many Psilocybe have poisonous and deadly lookalikes.

Ongoing traditional use of Psilocybe mushrooms became public knowledge from the 1930s, particularly the use of *P. caerulescens*, and *P. mexicana* in Oaxaca, Mexico. The three most well-known Psilocybe species are *P. semilanceata* AKA "liberty caps", *P. cubensis AKA* "cubes" and varieties of *P. subaeruginosa* AKA "wavy caps", "flying saucers" and/or "subs". In Australia, the most common Psilocybe mushrooms are P. cubensis and P. subaeruginosa. Many species within the Psilocybe genus contain the psychedelic tryptamine, psilocybin, a pro-drug of psilocin.

Blue meanie mushrooms (*Panaeolus cyanescens, syn. Copelandia cyanescens*)

Blue meanies are dung-inhabiting fungi, commonly found in cattle or horse dung. They have small caps that change from light brown to grey or off-white over time, mottled gills, and bruise a blueish colour where damaged. Blue meanie spore prints are jet black.

Blue meanies contain the psychedelic tryptamines psilocybin and psilocin. Blue meanies tend to have a high psilocin content, relative to Psilocybe species. Psilocin is a less stable metabolite of psilocybin, so while fresh blue meanies can be incredibly strong, their potency decreases significantly over time.

San Pedro cacti (*Trichocereus species*)

San Pedro are a group of cacti endemic to the Andes Mountain range of South America, including *T. bridgesii*, *T. pachanoi*, and *T. peruvianus*. San Pedro grow in tall columns, both with and without visible spines. San Pedro skin ranges from green to glaucus blue, with white flowers, hairy flower corollae, and a golfball-sized green fruit.

San Pedro have been consumed by many different cultures throughout South America over thousands of years, most famously by the Chavin culture of central Peru. San Pedro contain the psychedelic phenethylamine, mescaline.

Peyote cacti (*Lophophora williamsii*)

Peyote is a singular species of cactus endemic to Mexico and Texas. Above the soil, Peyote appear as small spherical heads or 'buttons', with a prominent, cone-shaped root below the soil line. Instead of spines, Peyote have white tufts of fluffy hairs. They are self-fertile and have white to pink flowers, with a small pink fruit.

Peyote has been consumed by many different cultures throughout the southern region of North America for thousands of years. In Mexico, Peyote cultures have long been maintained by Wixaritika (Huichole) peoples. In the United States, members of the Native American Church are the only people legally permitted to consume Peyote, but there are other First Nations people outside of this group who are not legally allowed to maintain these traditions. Peyote are threatened in habitat, and wild harvest should be avoided, unless maintaining First Nation traditions. Peyote contains the psychedelic phenethylamine, mescaline.

Sonoran Desert toads (*Incilius alvarius*)

Sonoran Desert toads are a species of frog endemic to Mexico and southern United States. These toads have leather-like skin of a greenish-brown colour, yellow eyes with horizontal pupils, and make a short, soft croak.

Glands on these toads produce a defensive toxin that has recently been discovered to contain the psychedelic tryptamines 5-MeO-DMT and bufotenine, as well as other compounds. The poaching of wild toads for the purpose of harvesting and smoking their venom has been criticised as unsustainable, and ecologically damaging. For this reason, many advocate for the substitution of natural 5-MeO-DMT with the synthetic compound.

Kratom trees (*Mitragyna speciosa*)

Kratom is a perennial tree in the coffee family with large, bright green leaves that have a glossy topside. Kratom leaves have a central vein with smaller veins occurring on either side in pairs. These veins can be red, green, or white in colour. Kratom flowers are yellow, with the appearance of small spiky balls.

Kratom has long been used throughout Southeast Asia and curiously has both stimulating properties and opioid-like effects, containing a number of alkaloids, including mitragynine and 7-hydroxymitragynine. Kratom leaves are consumed fresh or dry, often as a tea. Traditionally, fresh leaves are chewed as a quid.

Poppy pods (*Papaver somniferum*)

Poppies are an annual flowering herb appreciated around the world for their beautiful flowers, delicious seeds, and medicinal properties. Poppies can grow quite tall, with a glaucus stem and coarsely hairy leaves. Poppy flowers typically have four red, purple, or white petals.

Human use of poppies is ancient, stretching well beyond written history, predating 5000 B.C. Medicinally, poppies are used to make opium, an opiate-containing resin traditionally produced by bleeding latex from fresh poppy fruit pods. GMO poppies are used to produce compounds like thebaine and oripavine (particularly *Papaver brateatum* and *P. somniferum x P. brateatum* hybrids), which are used in the manufacture of other opioid medications, such as oxycodone. Consumption of these high thebaine poppies, without proper caution and preparation, can result in death.

Cannabis herb (*Cannabis species*)

Cannabis are annual, deciduous herbs with a distinctive leaf shape consisting of 7-13 leaflets. Cannabis typically grows in a vegetative state for one or two months, before blooming dense, imperfect flowers that mature for another two months or so.

Cannabis has long been part of human culture and has been cultivated all over the world, making it difficult to locate a single point of origin for Cannabis. Cannabis contains many cannabinoids, some of which are psychoactive, the most prevalent being THC and CBD.

Kava Kava pepper (*Piper methysticum*)

Kava is an evergreen shrub endemic to and traditionally cultivated amongst the Pacific islands. Kava has green heart-shaped leaves and infrequent, pale yellow flowers. Curiously, Kava is sterile; propagation of this plant does not occur from seed, only cuttings.

Kava roots contain kavalactones which are traditionally extracted with water after the roots have been ground and pulverised. The effects of drinking kava preparations are often euphoric and relaxing and may be likened to alcohol, operating on similar receptors (GABA).

Khat shrub (*Catha edulis*)

Khat is endemic to East Africa and the Arabian peninsula, growing as an evergreen shrub that, in the right circumstances, can develop into a tall tree. Khat has small white flowers with five petals that produce samara; dried, winged fruits transported by wind. Khat leaves are leathery and have a yellow to green colour, with an oval shape and a serrated margin. Different Khat varieties exist, some with oval red leaves, and others with narrow green leaves.

Khat contains cathinones, most notably cathinone and cathine, which bear structural similarities to amphetamines. Traditionally, khat is consumed by chewing fresh leaves as a quid or by brewing dried leaves as a tea. When consumed, khat produces stimulating and euphoric effects.

Ma Huang shrub (*Ephedra sinica*)

Ma Huang is a small evergreen desert shrub endemic to Central Asia. Ma Huang has tiny, scaly leaves less than a centimeter in length, commonly observed as a bush of cylindrical, grey-green stems with vertical grooves. Flowers are yellow and produce red, berry-like (false) fruits.

A long-time component of traditional Chinese medicine, Ma Huang contains a variety of compounds structurally related to amphetamines, including ephedrine and pseudoephedrine. Traditionally brewed as a tea, Ma Huang produces stimulating and euphoric effects.

Coca bush (*Erythroxylum coca, E. novogranatense*)

Coca is an evergreen bush, endemic to South America and introduced to Mexico and Indonesia. The majority of Coca comes from the cultivation of four varieties (Bolivian Coca, Amazonian Coca, Colombian Coca, and Trujillo Coca), derived from the domestication of *E. gracilipes*. Coca has shiny, thin oval-shaped leaves and straight branches with reddish brown bark.

Coca contains cocaine, with the leaves of these plants traditionally being chewed or brewed as a tea for thousands of years in religious, medicinal, and other cultural contexts. Besides a few countries in the Americas (Bolivia, Columbia, Peru), Coca is illegal to cultivate and is most often found on the black market as cocaine, a white powder which has been extracted, isolated, and often adulterated.

Kambô frog (*Phyllomedusa bicolor*)

Kambô is a small Amazonian tree frog with a blueish-green body and white to cream belly. Kambô is endemic to the Amazonian Basin, including areas of Bolivia, Brazil, Columbia, and Peru. Kambô calls sound like a number of short croaks, followed by a longer croak.

Kambô skin secretions contain bioactive peptides, including the opioid peptides dermorphin and deltorphin. First Peoples of the Amazon maintain traditions in which Kambô secretions are applied to small burns made on human skin. In the past decade or so, Kambô use has begun to spread throughout the world. The effects are largely unstudied at present.

Iboga shrub (*Tabernanthe iboga*)

Iboga is a perennial rainforest shrub that can also appear as a tall tree. Iboga has smooth grey bark, small green leaves with an ellipsis shape, and tiny yellow, pink to white spotted flowers producing yellow fruit. Iboga is endemic to Central Africa, where it has been dispersed by elephants eating the fruit.

Iboga root bark contains psychoactive alkaloids, including ibogaine, ibogaline, and ibogamine. Traditionally, Iboga root bark has been consumed as part of initiation rites and for medicine. Iboga appears to be uniquely effective at treating opioid dependence and withdrawal. While ibogaine is a psychedelic tryptamine, unlike most classical psychedelics, ibogaine has unique cardiovascular risks due to its effect on heart rhythm.

Hawaiian baby woodrose vine (*Argyreia nervosa*)

Hawaiian baby woodrose (HBWR) is a woody, perennial, creeping vine endemic to Southern Asia. HBWR has heart-shaped leaves that are smooth and green on top but woolly and silver underneath. The flowers are lavender, darkening in the corolla.

HBWR seeds contain a variety of ergoline alkaloids that bear structural similarities to LSD, including ergine (LSA), isoergine, and ergometrine. There is no known traditional usage of HBWR as an entheogen, although there has long been use of the plant within ayurvedic medicine. The furry coating of HBWR seeds contains cyanogenic glycosides, which can cause poisoning.

Ololiuqui vine (*Ipomoea corymbosa, syn. Rivea corymbosa, Turbina corymbosa*)

Ololiuqui is a woody, perennial, creeping vine thought to be endemic to the region between Mexico and Peru. Ololiuqui has bright green heart-shaped leaves with small white hairs along the central vein on the underside. The flowers are white with a yellow, purple, or brown corolla.

Ololiuqui seeds contain a variety of ergoline alkaloids that bear structural similarities to LSD, including ergine (LSA) and isoergine. Ololiuqui seeds were a traditional entheogen of the Aztecs and other Mesoamerican peoples, appearing in their art and songs. Xtabentún is an ancient, psychoactive Mayan beverage made with honey from this species, and presently most Cuban honey is produced from Ololiuqui.

Morning Glory vine (*Ipomoea violacea*)

Morning Glory is a perennial, creeping vine found growing on tropical and subtropical coasts all over the world, except in Europe. Morning Glory has glossy, green heart-shaped leaves, with small, white-petalled flowers that open at night.

Morning glory seeds contain ergoline alkaloids, alkaloids with similar molecular shapes to LSD, including ergine (LSA). Much like Ololiuqui, morning glory seeds were traditionally used by the Aztecs and other Mersoamerican peoples, sometimes in combination. Morning Glory have occasionally been mistaken for *Ipomea tricolor*, which does not contain ergolines. *I. tricolor* can often be distinguished from *I. violacea* by blue and purple petals, although some *I. tricolor* cultivars have white petals.

Fly Agaric mushrooms (*Amanita muscaria*)

The Fly Agaric is an iconic mushroom endemic to coniferous and deciduous forests of Europe, Asia, and North America, and their growth relies on symbiotic relationships with certain trees. Fly agaric caps are bright red with white warts. They have a white stem with scales beneath a thin annulus and produce a white spore print.

Fly Agaric mushrooms have long been used by First Peoples of Siberia, most notably by Sámi people. Fly Agaric contains ibotenic acid, a neurotoxic compound, that turns into the psychoactive compound, muscimol, when heated. While some consider muscimol psychedelic, the effects of this substance are vastly different from psilocybin in that it primarily interacts with the GABA receptors. In small doses, Fly Agaric produces euphoric and relaxing effects, not unlike alcohol, and in higher doses produces a delirium-like state. Effects are highly variable between individuals.

Salvia herb (*Salvia divinorum*)

Salvia is a perennial shrub endemic to Mexico with emerald green to yellowish, hairy, egg-shaped leaves with a serrated edge and little to no leaf stem. Salvia flowers are white, hairy, held by a small purple calyx, and grow in whorls around a sizeable spike. Non-psychoactive Salvia (sage) species and cultivars are commonly grown for their flowers, as well as culinary and herbal properties.

Salvia has long been used by Mazatec people for healing and divination by the chewing of fresh leaves. Salvia contains salvinorin A, an incredibly potent psychoactive compound that interacts with kappa opioid receptors. Unlike other opioid receptor agonists, salvinorin A produces distinct mystical effects, although it does not interact with the 5HT2A receptor.

We welcome any feedback about this document in order to improve on the information shared.

info@entheogenesis.org

PSYCHOPHARMACOLOGY

DMT	DMT interacts with serotonin receptors. Effects are psychedelic, lasting for ~5-20 minutes when vaporised.
Harmaline	Harmaline is a beta-carboline and MAOI, interacting with NMDA receptors. Effects are sedating, lasting for ~4-6 hours when consumed orally.
Psilocybin	Psilocybin interacts with serotonin receptors. Effects are psychedelic, lasting for ~4-6 hours when consumed orally.
Mescaline	Mescaline interacts with serotonin receptors. Effects are psychedelic, lasting for ~8-14 hours when consumed orally.
5-MeO-DMT	5-MeO-DMT interacts with serotonin receptors. Effects are psychedelic, lasting for ~5-20 minutes when vaporised.
Mitragynine	Mitragynine interacts with opioid receptors, despite not being an opioid. Effects are euphoric, stimulating at lower doses, and sedating at higher doses, lasting for ~3-6 hours when consumed orally.
Opiates	Opiates from poppies include morphine and codeine, and interact with opioid receptors. Opium effects are sedating and euphoric, lasting for ~8-12 hours when consumed orally.
THC	THC is a cannabinoid, interacting with cannabinoid receptors. Effects are relaxing and euphoric, lasting for ~1-4 hours when smoked.
Kavalactones	Kavalactones interact with GABA receptors. Effects are sedating, lasting for ~4-6 hours when consumed orally.
Cathinones	Cathinones interact with dopamine receptors. Khat effects are stimulating, lasting for ~4-6 hours when consumed orally.
Ephedrine	Ephedrine interacts with dopamine receptors. Effects are stimulating, lasting for ~2-5 hours when consumed orally.
Cocaine	Cocaine makes the neurotransmitters dopamine, noradrenaline, and serotonin more available, and these neurotransmitters cause the effects associated with cocaine. Effects are stimulating, lasting for ~1-2 hours when consumed orally.
Bioactive peptides	Bioactive peptides in Kambô secretions include phyllokinin and dermorphin, which have complex receptor interactions, including with bradykinin and opioid receptors. Kambô induces nausea and discomfort for ~5-20 minutes when applied to superficial burns, followed by sensory effects lasting a day or so. Not psychedelic.
Ibogaine	Ibogaine has complex receptor interactions, including serotonin and opioid receptors. Effects are psychedelic, lasting for ~20-40 hours when consumed orally.
LSA	LSA interacts with serotonin receptors. Effects are psychedelic, lasting for ~5-8 hours when consumed orally.
Muscimol	Muscimol interacts with GABA receptors. Effects are sedating, lasting for ~6-10 hours when consumed orally.
Salvinorin A	Salvinorin A selectively interacts with opioid receptors. Salvinorin A is sometimes called psychedelic but does not interact with serotonin receptors. Effects are dissociative, lasting for ~30-60 minutes when smoked.

© Entheogenesis Australis 2023