Psychedelics or Hallucinogens

What do the very mixed group of hallucinogens found around the world share in common?

All contain something that resembles a neurotransmitter

Hallucinogens

This “classic” hallucinogen column produce similar effects

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5HT-Like Hallucinogens

Activate 5HT2 receptors, especially in prefrontal cortex and limbic areas, but is not readily metabolized

LSD History

- created by Albert Hofmann for Sandoz Pharmaceuticals
- was studying vasoconstrictio produced by ergot alkaloids
- initial exposure was accidental absorption thru skin
- so potent ED is in millionths of a gram (25-250 micrograms) & must be delivered on something else (sugar cube, gelatin square, paper)

Characteristics of LSD & Other “Typical” Hallucinogens

- Autonomic (mostly sympathetic) changes occur first (relatively mild)
- Sensory/perceptual changes follow
- Cognitive changes occur even later
- Hallucinogenic effects usually last ~6-10 hours
- Rapid tolerance but no dependence
- Quality of effects very user-dependent

Common Effects

- Sensory distortions (color, size, shape, movement), constantly changing
- Vivid closed eye imagery
- Synesthesia (crossing of senses – e.g. hearing music triggers visual effects)
- Altered recognition, feelings of novelty
- Altered body image & feelings of self
- Decreased logic & reality testing; confusion
- Altered emotions; feelings of insight
• Bad Trips
  • Panic reaction; feel out of control & like you are losing your mind
  • Unpleasant perceptions (claustrophobia, paranoia, overload)
  • Emotional crisis (depression, feelings of worthlessness or meaninglessness)
  • In susceptible individuals may precipitate a psychotic episode (1-5/1000 users)

• Treatment
  • “Talking down” in a less stimulating, reassuring environment, turning attention to more positive topics
  • Sedatives or antipsychotics in extreme cases

• Aftereffects
  • Flashbacks (“hallucinogen persisting perception disorder”)
  • Post-use depression, confusion or boredom
  • Some may show impaired cognitive function with heavy use

• Other Psilocedelics Acting as Serotonin Agonists at 5HT-2 receptors

• Psilocybin Mushroom
  • “Mexican magic mushrooms” or “shrooms”
  • Most often sold dried or in powder-packed capsules.
  • Dose = ~5-10 grams of mushroom, containing 10-20 mg psilocybin, but different sub-families of psilocybin vary widely in potency (LSD is ~100-200x as potent).
  • Psilocybin is turned into active compound psilocin in body; effects last 6-10 hrs.

• Morning Glory Seeds (aka ololiuqui, LAA)
  • Contain lysergic acid amide (LAA). LSD is 10-30X as strong.
  • Used for spiritual purposes in Mexico, Central & South America.
  • Negative side effects (vomiting, headache) limit its popularity for recreational use.
  • US seeds may be coated with harmful fungicide
• Dimethyltryptamine (DMT)
  • Found in many species of tropical plants but now also easy to synthesize
  • Usually snuffed or smoked because DMT on its own is destroyed by stomach acids*
  • Short-acting – effects gone in less than an hr
  • “Businessman’s LSD”

• Bufotenine (5-HO-DMT) from “Bufo” Toads
  • Toads secrete toxins as a defense mechanism
  • Concentration & composition vary with toad species, but generally cause cardiovascular & CNS stimulation.
  • Some can be toxic enough to kill pets that bite them; for some species the secretions are also hallucinogenic.
  • The toad is NOT licked but glands are “milked” to collect secretions.

• Hallucinogens Resembling NE & DA
  • Peyote cactus
  • Mescaline
  • Methylated amphetamines like MDMA
  • Nutmeg & Mace
  • Club drug 2CB is synthetic bromo-mescaline
  • New synthetic variations always coming out

• Hallucinogens Resembling NE & DA
  • PEYOTE
  • Cactus heads cut and dried. 5-20 buttons (containing 200-800 mg mescaline) are used.
  • Grows along and south of Texas-Mexico border.

• Methylated Amphetamines
  • Variations of amphetamines, methamphetamines, or mescaline
  • Some degree of stimulant properties + hallucinogen properties.
  • Risks: hyperthermia, dehydration, dry mouth & eyes, increased HR & BP (all of these are aggravated if you are dancing or very active), bruxism/jaw clenching, restlessness, possible seizures, bad trips
  • Content and quality of drug uncertain
Ecstasy
(MDMA)

- AKA: E, X, XTC, Mandy, Adam, hug, love drug, Molly*
- methylene-dioxy-methamphetamine (MDMA)
- Multiple effects
  - Stimulant rush & stimulant body effects
  - Hallucinogenic-like: enhances visual and tactile senses, but produces few hallucinations
  - Emotional—empathetic, sensual, disinhibited
  - 5HT release and blocks reuptake; can lead to 5HT depletion
- A large body of animal research (including primates) shows loss of 5HT neurons after MDMA; human brain imaging suggests decreased brain activity but no "before" and "after" comparison possible. A recent review of the human studies concludes neurotoxicity & related cognitive deficits highly likely. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181923/
  - http://www.youtube.com/watch?v=Z8jn2unqKGU

- AKA Bliss, Vanilla Sky, Purple Wave, Ivory Wave & others
- Contain "designer drug" stimulants (mephedrone, methylone, and/or MDPV or methylenedioxyppyrovalerone) illegal as of Sept 2011
- Like a hallucinogenic methamphetamine

Anticholinergic Hallucinogens

- In this case the drugs BLOCK rather than activate Ach receptors
- Recall Ach = parasympathetic transmitter & important transmitter in cortex (cognition), memory system, brainstem

Anticholinergic Hallucinogens (or more aptly "deliriants")

- Found in many plants
  - Atropa belladonna (Deadly nightshade)
  - Datura family (Jimsonweed, thornapple)
  - Henbane
  - Mandrake
- Contain atropine & scopolamine which block Ach receptors in CNS and parasympathetic system
- Used in past as beautifiers (dilate pupils), in witchcraft/black mass celebrations, and as deadly poisons
- Produce delirium, confusion & amnesia rather than a vivid sensory experience

Deadly Nightshade

"Bath Salts"

- AKA Bliss, Vanilla Sky, Purple Wave, Ivory Wave & others
- Contain "designer drug" stimulants (mephedrone, methylone, and/or MDPV or methylenedioxyppyrovalerone) illegal as of Sept 2011
Jimsonweed (Datura stramonium)

- A toxic plant that produces hallucinations
- http://www.youtube.com/watch?v=u12SZAyMp54&playnext=1&list=PLB240A88EC45DFB8B8B&index=19

Amanita Muscaria

- A less poisonous member of the Amanita (Death Angel) mushroom family
- Produces intoxication, mood swings, hallucinations
- Contains both glutamate & ACh related compounds
- http://www.youtube.com/watch?v=8s_fpRUqpuE

Do I have to Add a 5th Box to my Hallucinogen Table?

Salvia Divinorum
(Magic mint or Sally D)

- Very potent, short-acting naturally occurring hallucinogen taken orally or smoked
- Active ingredient salvinorin seems to act on kappa opioid receptors (but does not produce full narcotic effects)
- Not typically pleasurable but produces mind-altering 'spiritual', sometimes scary other-worldly perceptual changes

Psychedelic Dissociative Anesthetics

- Phencyclidine (PCP) (aka angel dust, horse tranquilizer, hog, PeaCe Pill, superjoint, Sheems, dank, 'embalming fluid', ozone, wack, THC, crystal, mescaline) & ketamine (Special K, vitamin K)
- PCP developed as a "dissociative anesthetic" (appear awake, but are “dissociated” from pain experience & sometimes from reality) and amnesic for the experience, but drug had too many adverse effects for human use
- Low dose floaty, numb euphoria, incoordination
- Higher doses may be either motionless zombie OR show agitation, emotional reactivity, psychotic-like, out-of-control behavior
- http://www.youtube.com/watch?v=692NA0q1uOM

Dissociative Anesthetics

- Block glutamate NMDA receptors
- More unpredictable in behavioral effects
- Greater risks (seizures, coma, fever, hi BP possible; memory problems, agitation, schizophrenic-like state)
- Long unpredictable timecourse, half life 11-51 hrs) sometimes with persisting effects
- Can cause dependency
- Higher incidence of bizarre and violent behaviors while under influence than other psychedelics
- Ketamine less potent. Sometimes used as a date-rape drug.

- * This is the same kind of receptor blocked by dextromethorphan in "Robo-tripping"