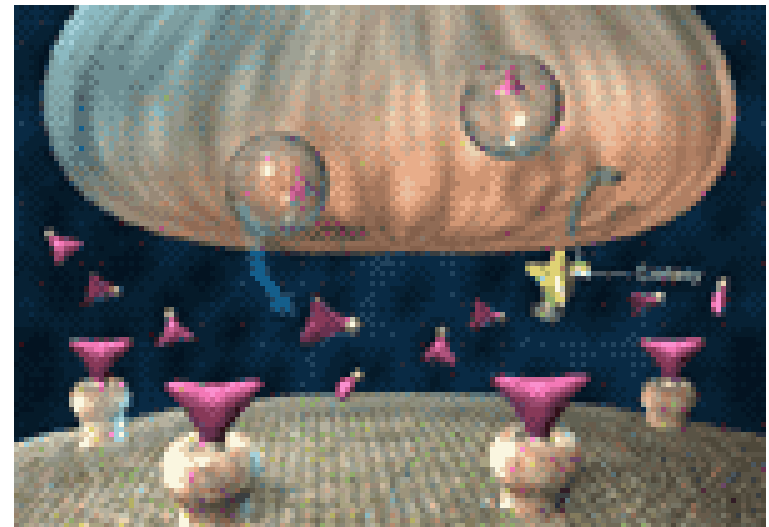


Categories of Drugs

Stimulants, Depressants,
Hallucinogens

Review of Neurotransmitters

- Serotonin - involved in regulation of a variety of behavioral functions
 - mood, anxiety, aggression, appetite, and sleep
- Dopamine
 - motivational processes - reward and reinforcement
- Norepinephrine
 - important roles in the processes of attention and arousal



What is Marijuana



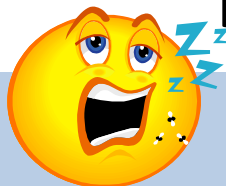
- Marijuana is a grey or green mixture of dried flowers and leaves from the *Cannabis sativa*, or hemp plant.
- Marijuana is actually smoked as a cigarette (called a joint or a nail) or in a pipe or a bong. Recently it has appeared in cigars, called blunts.
- But marijuana can also be mixed into food (like brownies, cookies, and lollipops), brewed as a tea, or inhaled with a vaporizer. With edible marijuana, there is portion size to take into consideration.
- People might be used to eating a few cookies, but the recommended dose of a pot cookie might only be a tiny piece of a single cookie.





Marijuana

Physical Effects



Depressant:

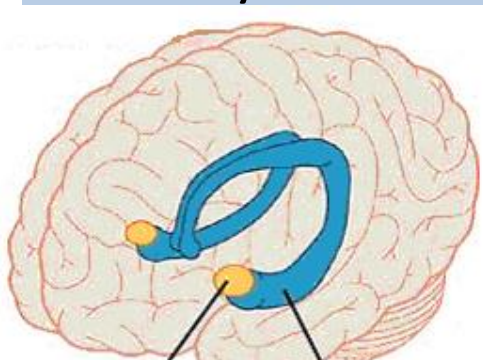
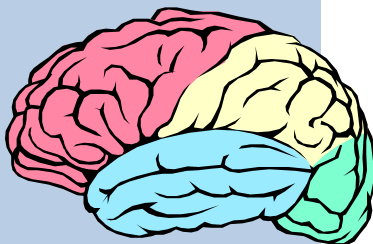
*With most doses it is a depressant but with different doses it can also be a stimulant or a hallucinogen.

*Slows normal functioning of the cerebellum, loss of balance

*blood shot eyes

*can't concentrate

*Decreases short term memory

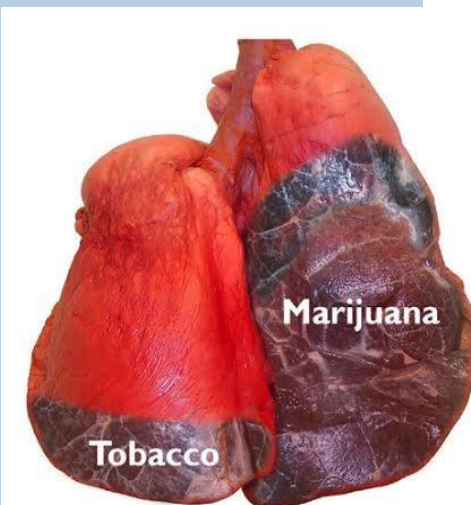


Additional Effects

*Lung Cancer

*Emphysema

Marijuana smokers tend to inhale more deeply and hold their breath longer than cigarette smokers, which leads to a greater exposure per breath to tar.⁸



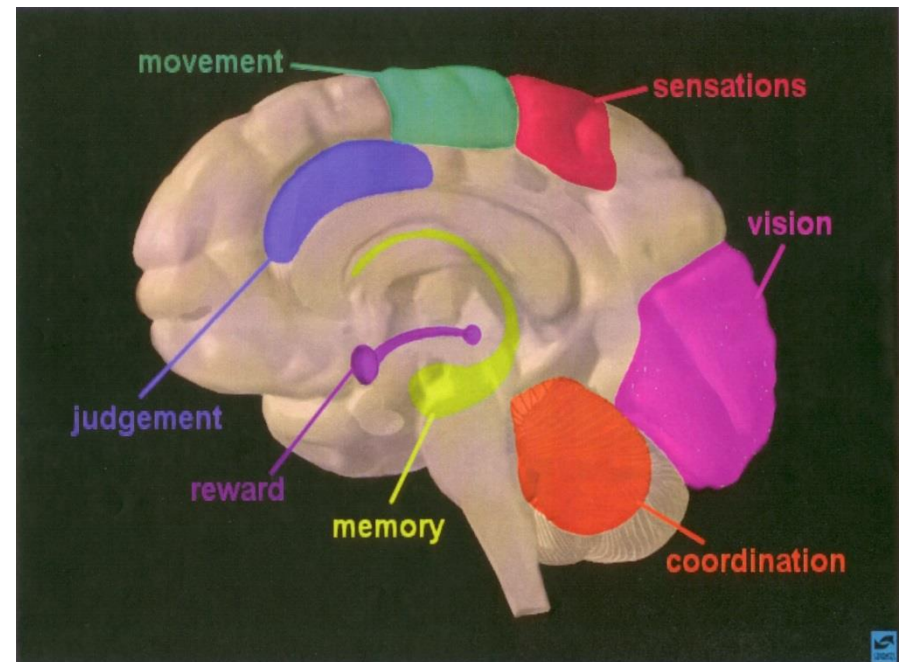
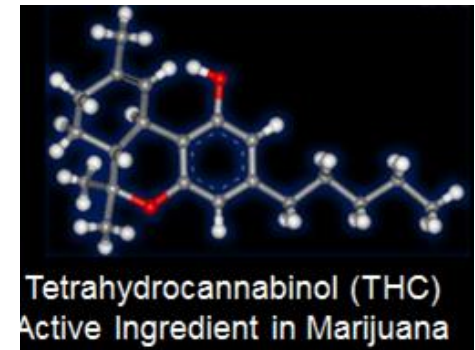
Marijuana deposits four times more tar in the lungs than tobacco

Marijuana : How it Affects the Brain

Anandamide:

- 1992 – NIDA announced the discovery of ANANDAMIDE (Sanskrit word for “bliss”), the natural neurotransmitter that first into the receptor sites.
- Like other psychoactive drugs, THC activates neurons because its chemical structure mimics the natural neurotransmitters – can directly and indirectly target the brain’s reward system by flooding the circuit with dopamine.

THC



Effects

Doses

- *Strong dose - stimulation, giddiness, Colours and sounds may seem more intense
- *Very strong dose- feelings of movement, visual hallucinations
- *Mental effects dependent on set, setting, and experience
- *Can exaggerate mood, personality

Long Term Use

- "Amotivational syndrome"
The person just does not care about anything. Not motivated.
Tolerance- tolerance develops quickly to anandamide. The user can't resist marijuana
- **MYTH:** Marijuana relieves stress.
- **FACT:** Marijuana, like all drugs, merely postpones coping with problems and deadlines; marijuana can lead to depression.

Choices and Outcomes

Why People Use

*decreased nausea and
Increased appetite:
chemotherapy patients

*Anticonvulsant- reduces
seizures but not a lot of
research to support this with
the other side effects

- Family Influence
- Psychiatric Disorders
- Bad Friends
- Problems in Social Life
- Feel Older(stops brain development so don't ever really mature)

Dependence/Withdrawal

- can take 10 weeks for the person to be "clean."
- Actually there is no specific treatment of marijuana users as many of them are also addicted to stronger drugs as cocaine and heroin and there is no medicine which reduces the need of marijuana.
- Users enter specific centers and are kept for about 3 months without having marijuana.

Inhalants

TERMINOLOGY

Sniffing - Inhaling vapors from an open container or off a heated pan

Huffing - Inhaling vapors from a volatile-soaked cloth held against the face

Bagging – Application of the volatile into a paper or plastic bag, which is then held over the face

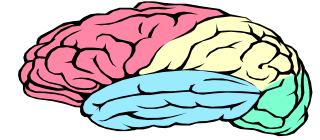
Inhalants: Effects

- Chemicals become absorbed into fatty tissues in the brain and the nervous system
 - Typically affecting the myelin surrounding the bodies nerve cells
 - with long term use myelin is broken down and ultimately nerve cells can not transmit messages to one another.
 - Results in temporary loss of motor control and a "dissociative" psychological effect, where sensations and perceptions become disconnected.





Effects of Inhalants



Behavioral Effects

Users may experience:

- Euphoria
- Light-headedness
- Sleepiness
- Distorted Space Perception
- Nausea
- Spinning
- Drunkenness
- Altered shapes and colors
- Dizziness
- Numbness
- Slowed breathing
- Slowed heart rate
- Disorientation
- Loss of body control

Outcomes

-A. Brain- causes sensory and psychological disorders. Since myelin sheaths are affected cell death is predominant.

- B. Cerebral Cortex- Cell death causes permanent personality changes, memory impairment, hallucinations and learning disabilities
- C. Cerebellum- damage results in a loss of coordination and slurred speech. Chronic users experience tremors and uncontrollable shaking

Death

- Suffocation
 - Choking on one's vomit while unconscious
- Asphyxiation
 - Decrease in oxygen and increase in carbon dioxide

Club Drugs



Common Club Drugs:

- Club drugs are the drugs being used by young adults at dance parties, raves, clubs, bars, home parties.
- MDMA (Ecstasy)
- Gamma-hydroxybutyrate (GHB)
- Ketamine
- Rohypnol
- Metamphetamine
- Lysergic acid diethylamide (LSD)

MDMA (Ecstasy)

- 3,4-Methylenedioxymethamphetamine
 - Structurally resembles both the stimulant amphetamine and the hallucinogen mescaline
- Street names
 - Ecstasy, Adam, Bean, XTC, E, X, Hug Drug, Molly
- *Usually ingested in tablet form
 - can also be crushed and snorted, injected or used as suppository
 - Costs \$0.02-\$0.50 per tablet to produce

Ecstasy

Effects of Ecstasy

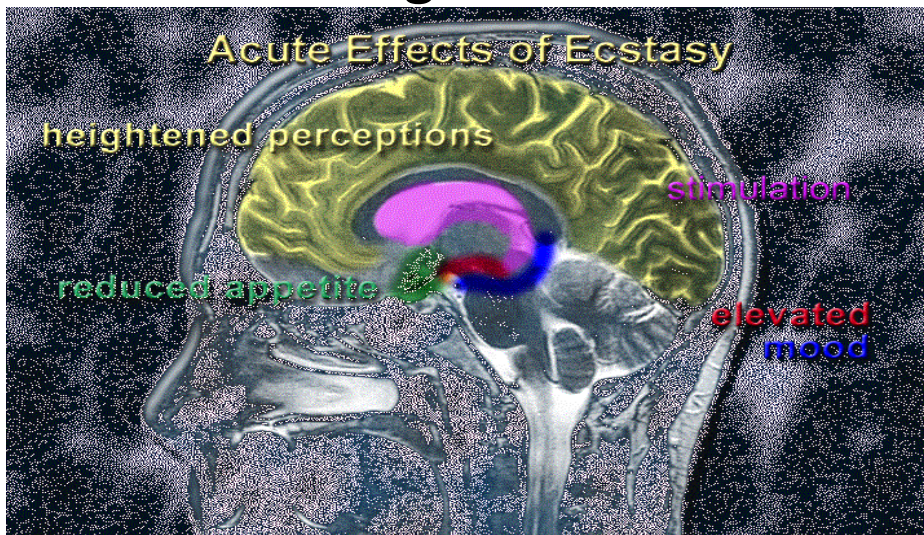
PHYSIOLOGICAL

- Sensory awareness
- Loss of appetite
- Nausea
- Muscle aches
- High Elevated Heart Rate
- Hypothermia- get cold
- Heart complications
- Liver damage

Mental Effects

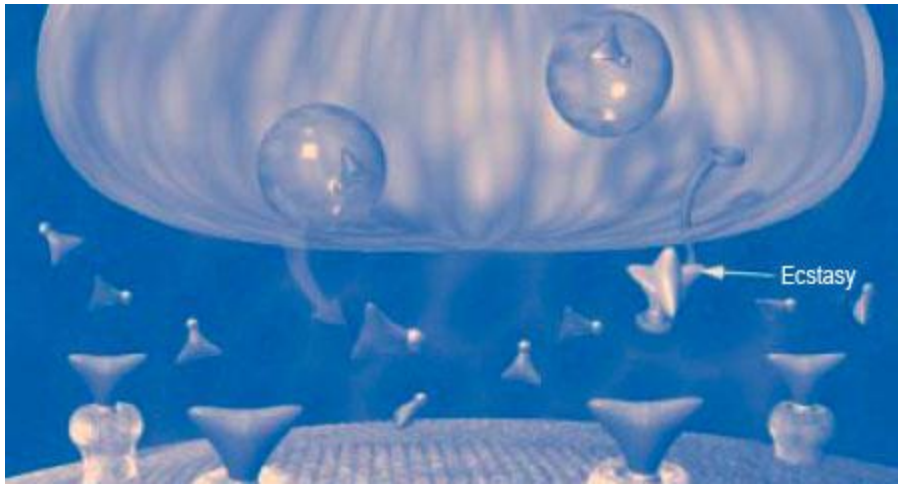
PSYCHOLOGICAL

- Euphoria
- Anxiety, depression, and panic attacks
- Depersonalization
- Paranoia
- Psychotic experiences
- Cognitive deficiencies, e.g., memory loss and decreased planning ability



PHYSIOLOGY SHORT TERM Ecstasy

- ☹ High Body Temperature
- ☹ Dehydration
- ☹ Grinding Teeth
- ☹ Tightening of jaw muscles
- ☹ Accentuated Sensory
- ☹ Headaches
- ☹ Body/Muscle Aches
 - ☹ Shoulders
 - ☹ Back
 - ☹ Neck
- ☹ Stomach cramps
- ☹ Flu symptoms
- ☹ Increase in blood pressure
- ☹ Increase in heart rate
- ☹ Dilated pupils/bronchi
- ☹ Alertness
- ☹ Acne/Skin rash - Body
- ☹ Depression
- ☹ Fatigue
- ☹ Paranoia



COMPLICATIONS LONG TERM Ecstasy

 **Blood Clotting - High Temperature
(1st leading cause of death)**

 **Deterioration of Muscle Proteins - May Burst (2nd
leading cause of death)**

 **Brain Damage**

 **Kidney Failure**

 **Cardiovascular Collapse**

 **Stroke**

 **Liver Failure**

 **Respiratory Failure**

 **Psychosis**

 **Death**

Gamma Hydroxybutyric Acid (GHB)

Forms

- GHB can be produced in clear liquid, white powder, tablet, and capsule forms, and it is often used in combination with alcohol, making it even more dangerous
- SEDATIVE
- EUPHORIAN



A CNS depressant

Often used at the end of a rave to help people come down from their Ecstasy high

- Used initially for intravenous induction of anesthesia
 - undesired side-effect: seizures
- clear, odorless liquid; its bitter or salty taste is easily masked in flavored beverages
- At high doses (50-60 mg/kg)
 - Associated with coma, as well as respiratory depression, and seizures

Chronic Use

- dependence
- withdrawal symptoms
 - tremors, anxiety, myalgias, tachycardia, HTN, autonomic instability, and delirium

Ketamine

What is it?

- A short-acting dissociative anesthetic
- Street names:
 - K, Special K, Vitamin K, Cat Valium
- Primarily used today for procedural sedation in pediatric and veterinary populations
- Difficult to synthesize and frequently stolen from veterinary clinics and hospitals
- Forms
 - white powder
 - ingested orally or snorted intranasally
 - clear liquid
 - injected IM or IV



Effects

- Binds to receptors in the cortex and hippocampus
- Desired Effects
 - “K-land”
 - pleasant state of distorted perception, “out-of-body” dissociative state and hallucinations
- Adverse Effects
 - “K-hole”
 - catatonia, bizarre behavior, psychosis, social withdrawal
 - occurs with higher doses
 - chest pain, palpitations, vomiting, anxiety, impaired coordination, and slurred speech
 - low doses - impaired memory, attention span and learning ability
 - large doses - over-sedation and respiratory depression
 - addictive

Rohypnol

Street names

Roofies, Rophies, Roche, R-2, Mexican Valium and Forget-Me Pill

- Approved for use in Europe as a treatment for insomnia, a sedative, and as an anesthetic
- Smuggled into U.S. from Mexico and Europe
- Form
 - manufactured in pill form and taken orally
 - can be crushed and snorted
 - tasteless, odorless, and dissolves easily in carbonated beverages

Added to drinks

Effects

- anterograde amnesia
 - Used as a date rape drug
- drowsiness, hypotension, respiratory depression, visual disturbances, dizziness, confusion, N/V, urinary retention
- impairment can last up to 8 to 12 hours
- alcohol aggravates toxic effects



“Krokodil”

- Cheap heroin substitute
- Desomorphine (Heroin is diacetylmorphine)
- Made by combining codeine tablets with toxic chemicals (i.e., lighter fluid, industrial cleaners)
- More powerful than heroin with a shorter duration
- Causes gray/green scaly flesh at site of injection, thus the name
- Injection sites often become gangrenous
- Average life-span after beginning use is 2 years



Hallucinogens: Distorting the senses and clouding the mind

PCP

*PCP prompts violence, can induce psychosis, and cause death by respiratory arrest.

*Originally developed as a synthetic drug 1959, Phencyclidine (PCP, or angel dust) is a dissociative anesthetic. In its pure form, PCP is a white, crystalline powder.

*A street drug since the 1960's, it is now produced in clandestine labs and sometimes passed off as mescaline or as another hallucinogen with less extreme effects.

*In large quantities it smells like strong ammonia. While use of PCP died down after the 70's PCP is making a resurgence in parts of the Northeast parts of the country despite its now known dangers.



How is it made?

*Usually smoked, PCP can also be taken orally, snorted, or injected. It is sold in capsules, tablets, powder, and liquid. Most often the crystalline powder is sprinkled on a leafy substance—tobacco, parsley, mint, oregano, or marijuana—and then smoked in rolled cigarettes.

*It is marketed under so many different names (wet, bobbies, dippies, dank, amp, hydro, purple haze, haze, and lillie just to name a few) that users aren't always aware

PCP

- *The effects of PCP can be unpredictable and are often severe. Moderate doses (5 milligrams or less), generally produce initial feelings of relaxation and mild euphoria, but depression, anxiety, or disorientation can also result. Within the normal dosage range, users feel powerful, "spaced out," or detached and may experience LSD-like visual distortions.*
- Physical effects LSD Blotter Paper LSD Pills PCP include: rising heart rate, blood pressure, and body temperature; flushing and sweating; shallow breathing; numbness; and some loss of coordination.
- *At higher doses, respiration drops and users may experience nausea, vomiting, loss of balance, and dizziness. They often display dramatic mood swings and are prone to anxiety, paranoia, and aggressiveness. Violence is not uncommon.*
- **Paranoid delusions and aggressive behavior are sometimes followed by PCP-induced psychosis that may mimic symptoms of schizophrenia.**
- Psychotic episodes can last several days, and it may take as long as two weeks for patients to return to normal. At toxic levels, or when interacting with alcohol or other depressant drugs, PCP can prove fatal, causing convulsions, coma, and respiratory arrest. PCP can also exacerbate pre-existing mental disorders

Lysergic acid diethylamide (LSD)

LSD

- A hallucinogen
- LSD may trigger anxiety, panic, depression, paranoia, and psychotic episodes.
- Street names
 - Acid, Blotters, Boomers, L, Yellow Sunshines
- In the 1960s, became popular as a recreational drug
- peaked in mid-1990s among high school students



LSD gelatin tablets or "window panes"

How is it made?

- Manufactured from lysergic acid which is found in ergot, a fungus that grows on rye and other grains
 - A water-soluble, colorless, tasteless and odorless powder in its pure form
 - Sold as tablets ("microdots"), gelatin squares ("window panes"), liquid, powder, and liquid-impregnated blotter paper
 - Current street dose is 25 to 80 mcg
- Mechanism of action
 - Acts on central serotonin receptors (5-HT₂)
 - Onset of action
 - 30-90 minutes
 - Peak effect
 - 3-5 hours
 - Duration of action
 - 8-12 hours

LSD Long Term Effects

“Trips” - term used to refer to hallucinogenic experiences

- Effects unpredictable
 - depend on amount of drug taken, the user’s personality, mood, expectations and surroundings
 - “Bad trips” can be terrifying
- Physical Effects
 - dilated pupils, hyperthermia, tachycardia, diaphoresis, loss of appetite, tremors
- apnea, seizures, coma, respiratory arrest

Psychological/Sensory Effects

- euphoria, mood swings, anxiety and panic
- altered perception - delusions and hallucinations
- sensations may “cross over”
 - hearing colors and seeing sounds
- **Long-Term Complications**
 - persistent psychosis
 - posthallucinogen perception disorder
 - visual disturbances, such as trails of light
 - flashbacks
 - occur 15% to 77% of users
 - often weeks to years later after taking LSD
 - tolerance develops
 - users do not become physically addicted, but need increased doses to achieve similar effects
 - increasing risk of side effects

Opium



- The flower is grown mainly by impoverished farmers on small plots in remote regions of the world.
- It flourishes in dry, warm climates and the vast majority of opium poppies are grown in a narrow, 4,500-mile stretch of mountains extending across southern Asia from Turkey through Pakistan and Laos.
- About three months after the poppy seeds are planted, brightly-colored flowers bloom at the tips of greenish, tubular stems. As the petals fall away, they expose an egg-shaped seed pod. Inside the pod is an opaque, milky sap. This is opium in its crudest form.
- Poured into molds and dried in the sun, it is now morphine base, which has the consistency of dense modeling clay. Morphine base is smokable in a pipe - a practice introduced by the Dutch in the 17th century - or ready for further processing into heroin.

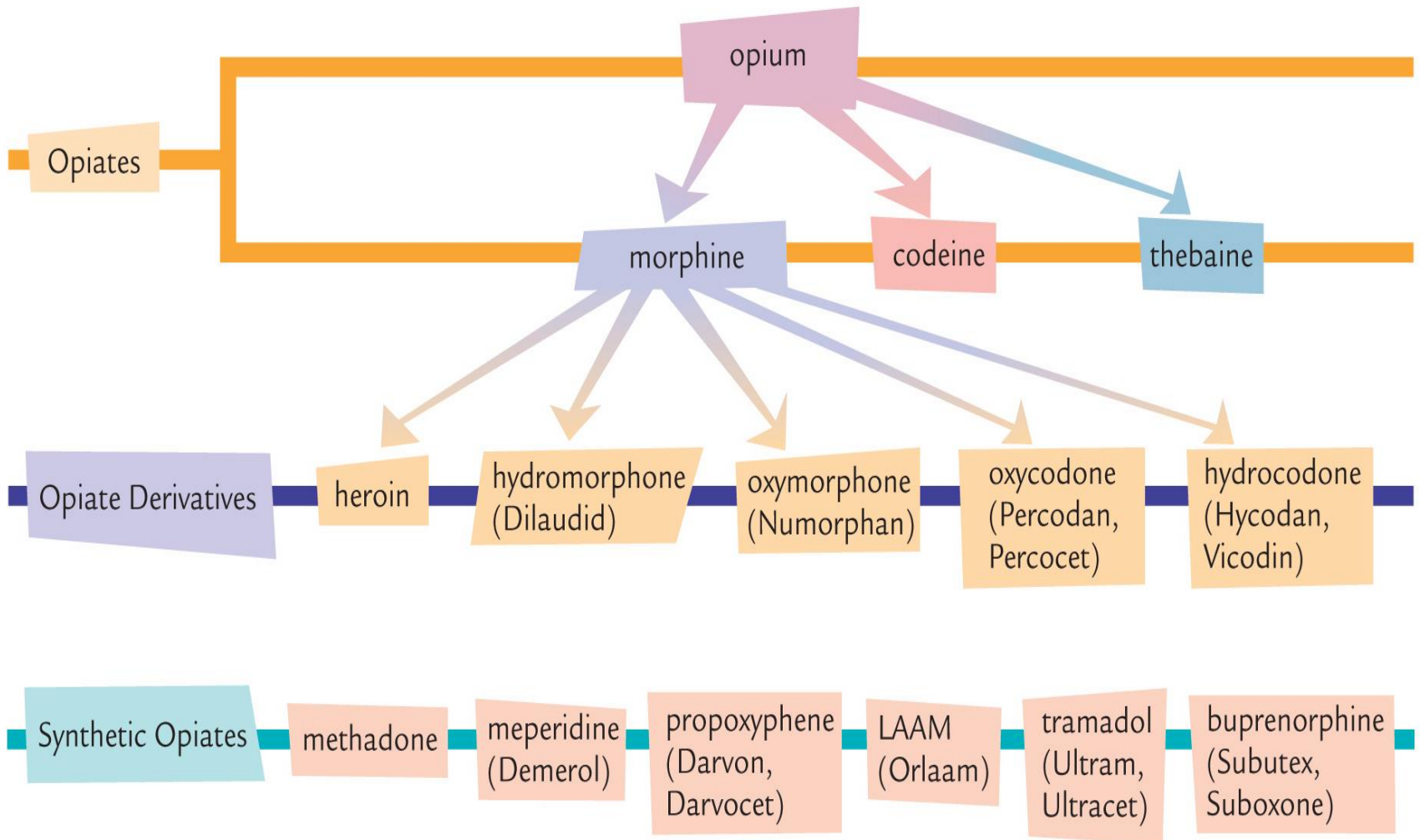


Can a person fail a drug test by eating Poppy Seeds?

- Before they're put into muffins, bagels, or cakes, poppy seeds can be found in poppy seed pods. It just so happens that opium is found in those same seed pods—it is a milky substance that is extracted from the seed pods which contains morphine and codeine, among other pain relieving substances. While poppy seeds themselves don't inherently contain any opium, when the seeds are harvested, they can become contaminated with the opium in the pod.
- The poppy seeds must then be cleaned and processed. Some countries have strict processing requirements for opiate residues, while others
- A test was conducted by MythBusters, who found the same thing: the opium found on poppy seeds stayed in the system up to 48 hours after consumption in significant enough quantities to potentially test positive in certain drug tests.
- All that said, the concentration of opium in the urine of someone who eats a poppy seed muffin is much lower than someone who is an actual opiate abuser. It's the same reason eating poppy seeds doesn't result in the same physical and mental side effects that using morphine does: there just isn't a lot of opium in the system after eating poppy seeds, despite the sensitivity of the tests.
- Just to be on the safe side, if you ever have to take such a test, best to swear off poppy seed food items for at least a few days before the test.



Derivatives



Narcotics:

Opium, Morphine and Heroin

Narcotics

Opiates are a class of narcotics that include opium and three natural components that can be extracted from it:

morphine
codeine

Opioids are synthetic compounds that act as opiates in the body (e.g. heroine, methadone)

Narcotics, sleep-inducing compounds, now used specifically in reference to opiates and opioids.

What is Heroin?

- Heroin is a narcotic that is highly addictive; It is processed from morphine, a naturally occurring substance extracted from the seedpod of the Asian poppy plant.
- Usually seen as a white or brown powder or as a black sticky substance.
- Pure heroin, which is a white powder with a bitter taste, is rarely sold on the streets.
- Sometimes cut with other substances such as sugar, powdered milk, cornstarch, or even poisons like strychnine.

Morphine and Heroin



History

- 1803-morphine identified as the principal active ingredient in opium, used for medical treatment of pain and chronic diseases.

1895
heroin (diacetyl morphine) was introduced by the Bayer Company in Germany. It was believed to lack the dependence-producing properties of morphine.



*Used at turn of the century to treat morphine addicts

Early 1900s

abuse potential of heroin & morphine realized
opium (but not heroin) banned in 1905

1914

Harrison Narcotics Tax Act passed
doctors must register and pay tax to prescribe narcotics
heroin trade went underground
fed drug-related criminal activities

Effects on the Mind and the Body

- *Acute effects of narcotics such as heroin; euphoria, analgesia, respiratory depression
- *Central respiratory depression is the major risk factor for acute heroin intake



Street Names and Effects of Heroin and Morphine

**H, Smack, Junk, Horse, China
White, Black Tar, Brown, Skag**

Short Term Effects:

The user feels the effect of heroin within seconds of taking it.

- Euphoria
- Warm flushing of the skin
- Dry mouth
- Heavy extremities
- Decreased mental ability
- Insensitivity to pain
- Vomiting
- Lowered breathing
- Lowered heart rate
- DEATH

Long Term Effects

- Addiction
- High degree of tolerance
- Brain damage
- Arthritis
- Liver disease
- Infection of the heart lining
- HIV/AIDS or hepatitis
- Abscesses of the skin (at injection sites)
- DEATH
- Heroin causes severe physical and psychological symptoms 6 to 8 hours after the last dosage. Painful withdrawal gets worse as time passes.