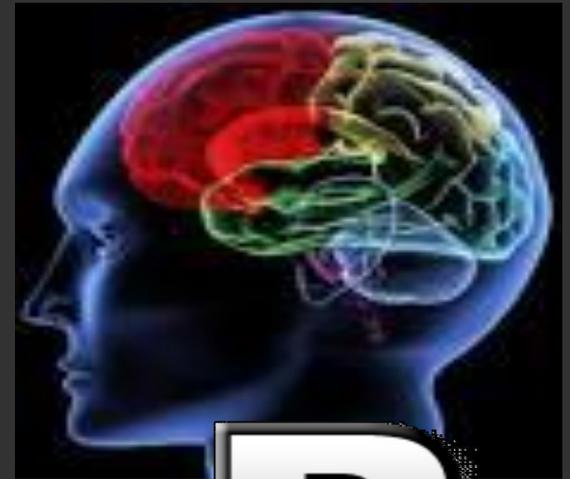


Rx Drug Abuse, A Nation's Epidemic



A presentation on the link between prescription drugs and heroin, how these drugs are getting here, the science behind it, and what we do now!

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New York National Guard Counterdrug Task Force*

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Albany Medical Center;
Department of Emergency Medicine and Medical Toxicology*





Disclosures

- This presentation is for informational purposes only and reflects the views of the authors. The information contained herein does not reflect official policy of the United States Air Force, New York Air National Guard, or the Department of Defense.
- We wish we had financial disclosures to report but unfortunately we have no conflicts of interest



Overview



- The Epidemic, an overview
- Where are they coming from?
- Commonly abused drugs
- What's the dangers, risk , signs and symptoms and brain chemistry of drugs of abuse
- Statistics
- Strategies

A Nations Epidemic



Prescription narcotics, often called narcotic analgesics, are the most used and abused substances today. Misuse and abuse of prescription opioids has reached epidemic proportions in the U.S. according to the surgeon general .

The "war on drugs" has focused nearly exclusively on dealers trafficking drugs like cocaine, heroin, and marijuana, while most of the “new drug dealers” live right next door to you. These new dealers are your doctors, lawyers, students, teachers, etc. Unwittingly and unprepared we became a nation obsessively trying to feel good, succeed and control behavior in our youth. By the time we questioned whether these legal drugs would have a lasting effect on our nation the death toll was rising along with the addiction rates.

Pharmageddon

Pharmageddon' Is Upon Us

Pharmageddon is "the prospect of a world in which medicines and medicine produce more ill-health than health, and when medical progress does more harm than good" -- and it is no longer a prospect but fully upon us. Those most at risk from dying from this new drug crisis are people you would least expect; the analysis revealed the death toll is highest among people in their 40s, but all ages, from teenagers to the elderly, and all walks of life are being affected. In fact, prescription drugs are now the preferred "high" for many, especially teens, as they are typically used legally, which eliminates the stigma of being a "junkie." - *The Baltimore Sun*

Where are they coming from?

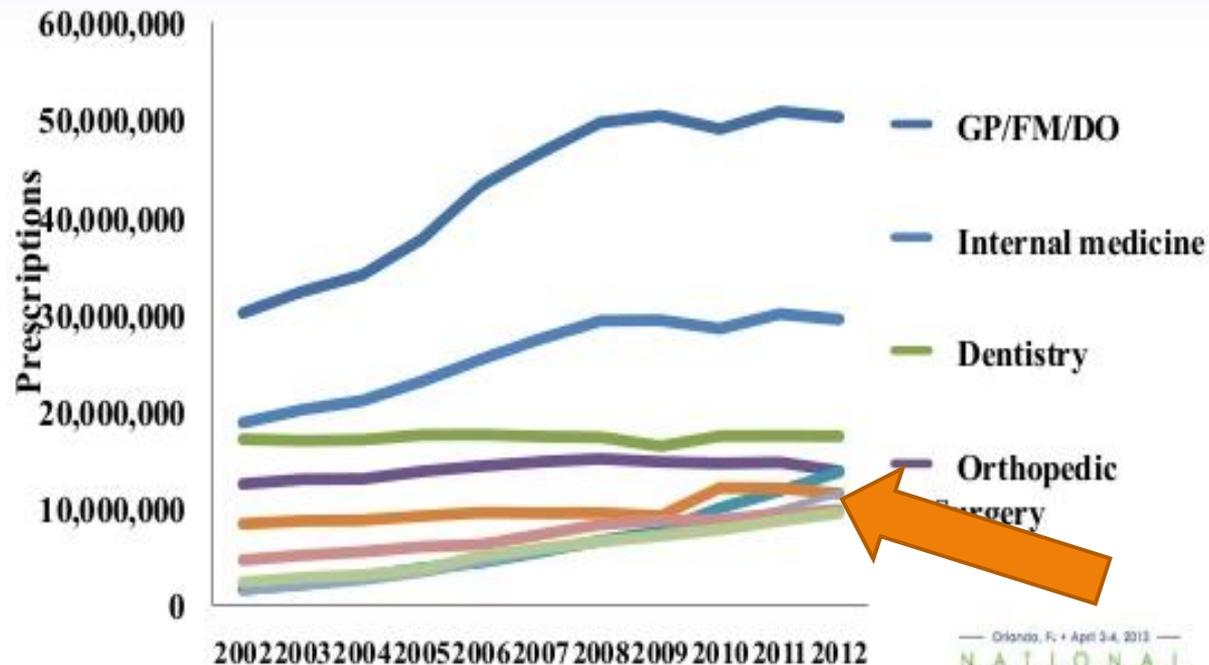


- Pharm Parties
- Friends/Family
- Theft
- Dr. Shopping
- Drug Dealers
- Internet
- Legal Prescription



Where is it coming from?

Top Prescribers of Opioid Analgesics in 2012



And according to the 2012 Monitoring the Future survey, about 50 percent of high school seniors said that opioid drugs other than heroin (e.g., Vicodin) would be fairly or very easy to get.

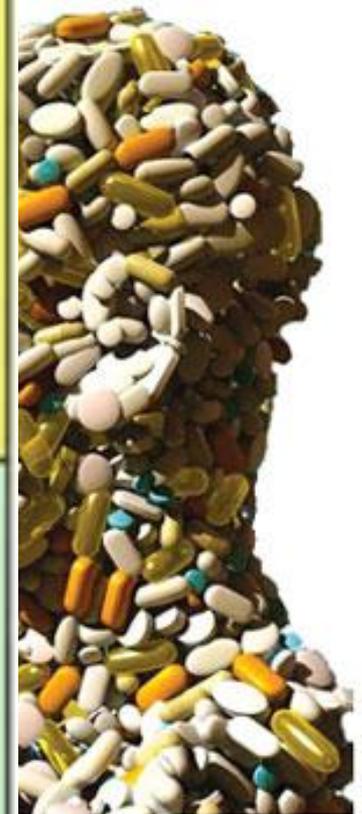
Drug Companies

WHEN THINKING OF STRATAGIES DON'T FORGET WHERE THEY COME FROM! Here is just a sample :

- **Merck:** More than \$5.5 billion in judgments and fines levied against it, it was five years *before* Merck made its \$30-billion recall of the painkiller Vioxxx.
- **Baxter:** Dozens of recalls of products that caused deaths and injuries, at least 11 different guilty pleas to fraud and illegal sales activity, more than 200 lawsuits – and more than \$1.3 billion in criminal fines and civil penalties.
- **Pfizer:** In the largest health care fraud settlement in history, Pfizer was ordered to pay \$2.3 billion to resolve criminal and civil allegations that the company illegally promoted uses of four of its drugs, including the painkiller Bextra, the antipsychotic Geodon, the antibiotic Zyvox, and the anti-epileptic Lyrica

Rx D Educ or In

Overweight? S
dysfunction? V
pill away accor
promoting pres



Internet - Silk Road



- Anonymous network known as Tor, made activity on Silk Road virtually untraceable.
- Silk Road used digital currency (BitCoin) to hide buyers and sellers.
- Over the past two and a half years, the FBI said the site generated revenue worth more than 9.5 million bitcoins -- valued at \$1.3 billion.
- The FBI said Ulbricht's net worth was essentially his value in Silk Road's commissions, which totaled more than 600,000 bitcoins (\$85 million).
- Silk Road wasn't restricted to illegal drugs. The FBI says it was also used to trade firearms, hire assassins and employ hackers.

COCAINE TRANSPORTATION ROUTES



MDMA TRANSPORTATION ROUTES



Commonly Abused Drugs



Rx



Chemistry of Addiction

A decorative graphic consisting of a solid red horizontal bar that spans the width of the slide. Below this bar, on the right side, there are several horizontal lines of varying lengths and colors, including white and light red, creating a layered, stepped effect.

Pharmacology of Addiction

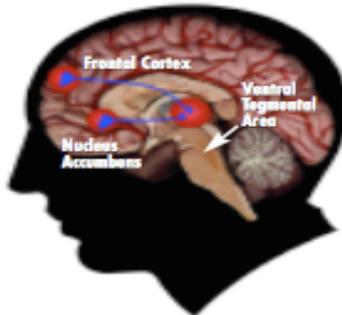
Your brains primary neurotransmitters are:

Dopamine, Serotonin, Epinephrine, Norepinephrine, GABA

- *Serotonin* regulates sleep and appetite and mood
- *Dopamine* is the feel good chemical, plays an important role in mood, energy, attitude, motivation.
- *Epinephrine and Norepinephrine* are the fight or flight hormones, increasing heart rate and blood pressure, dilating pupils and increasing sweat production and pyloerection
- *GABA* acts as your calming neurotransmitter, helping you relax

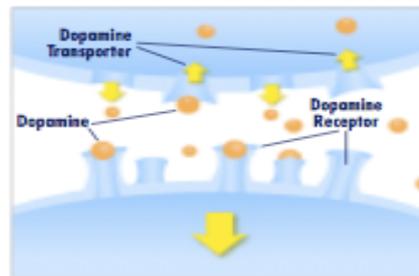
DRUGS OF ABUSE TARGET THE BRAIN'S PLEASURE CENTER

Brain reward (dopamine) pathways



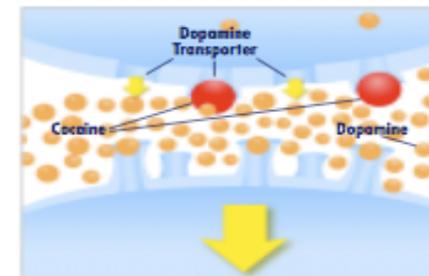
These brain circuits are important for natural rewards such as food, music, and sex.

Drugs of abuse increase dopamine



FOOD

Typically, dopamine increases in response to natural rewards such as food.



COCAINE

When cocaine is taken, dopamine increases are exaggerated, and communication is altered.

Mu Receptors

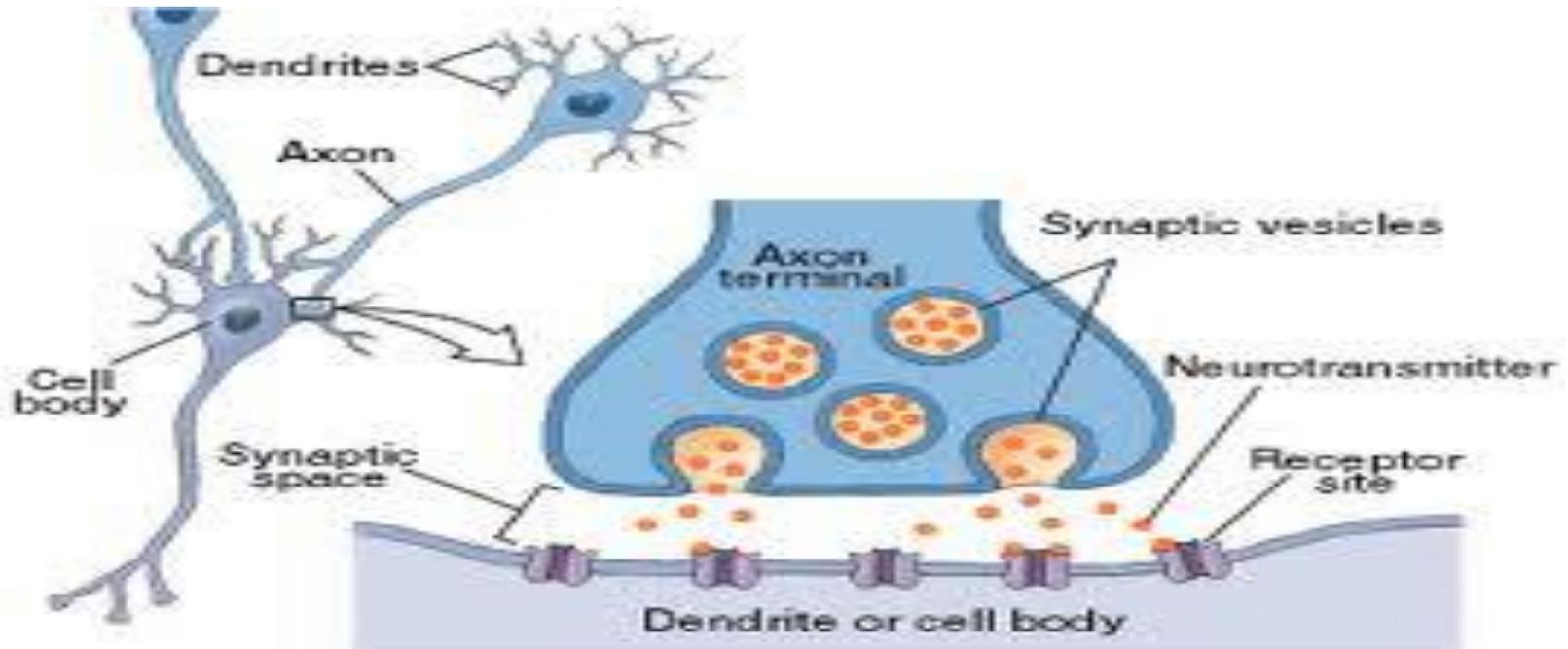
- Found in CNS
- Bind endorphins
- Causes sedation, decreased blood pressure, itching, nausea, decreased respirations, miosis, decreased bowel motility,
- ANALGESIA
- EUPHORIA



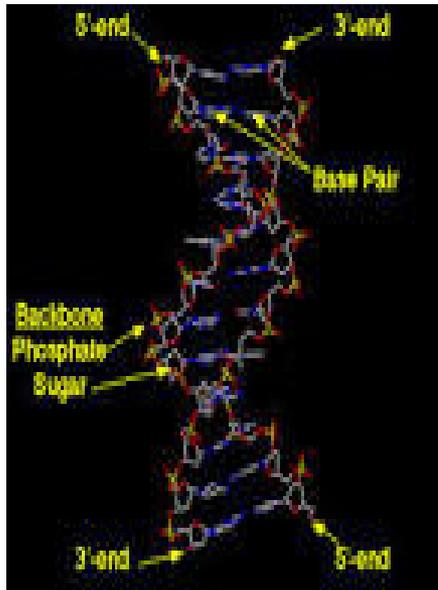
Brain Chemistry

Neurons can become sensitized or desensitized to dopamine

- One important aspect of drug addiction is how cells adapt to previous drug exposure.
- Long-term treatment with dopamine antagonists increases the number of dopamine receptors as the nervous system tries to make up for less stimulation of the receptors by dopamine itself. Likewise, the receptors themselves become more sensitive to dopamine. Both are examples of the same process, called **sensitization**.



Risk Factors



People of any age, sex or economic status can become addicted to a drug. However, certain factors can affect the likelihood of your developing an addiction:

Being male. Men are twice as likely to have problems with drugs.

Having another psychological problem. If you have a psychological problem, such as depression, attention-deficit/hyperactivity disorder or post-traumatic stress disorder, you're more likely to become dependent on drugs.

Family history of addiction. Drug addiction is more common in some families and likely involves the effects of many genes. If you have a blood relative, such as a parent or sibling, with alcohol or drug problems, you're at greater risk of developing a drug addiction.

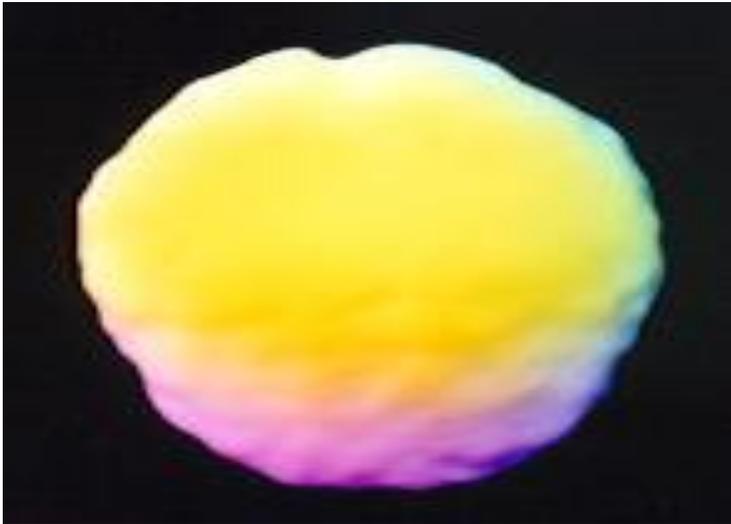
Lack of family involvement. A lack of attachment with your parents may increase the risk of addiction, as can a lack of parental supervision.

Taking a highly addictive drug. Some drugs, such as heroin and cocaine, cause addiction faster than do others.

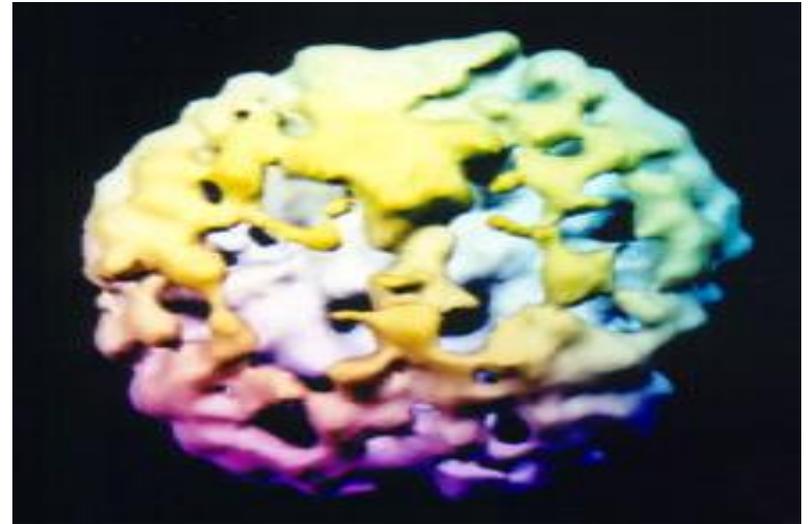
Age of first onset

Peer pressure. Particularly for young people, peer pressure is a strong factor in starting to use and abuse drugs.

Brain Imaging SPECT

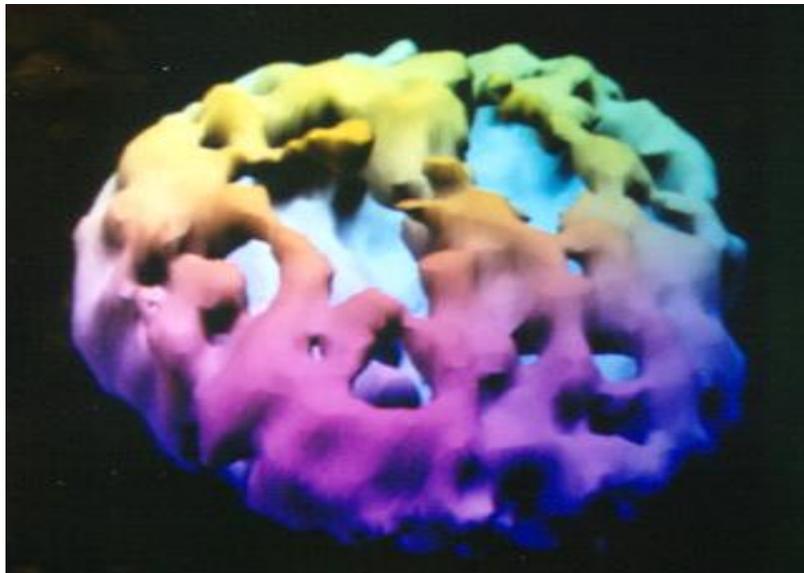


Normal brain view 39 y/o
*top down surface view, full
symmetrical activity*

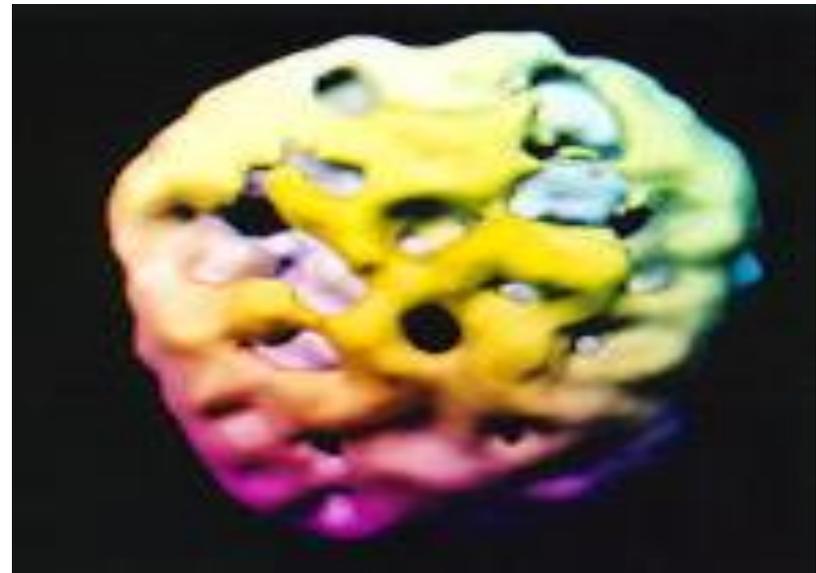


39 y/o -- 25 yr. hx of frequent
heroin use, *top down surface view*
marked overall decreased activity

Brain Imaging SPECT



39 y/o -- 25 yrs. of frequent heroin use



40 y/o, 7 yrs. on methadone
heroin 10 yrs. prior

Sympathomimetics

Cocaine

Amphetamines

Dextromethorphan

ADHD medications

Ecstasy

Amphetamines



- Stimulants increase alertness, attention, and energy.
- Indications: Narcolepsy, attention deficit hyperactivity disorder (ADHD), and depression that doesn't respond to other treatments.
- Abused by people looking for a sense of euphoria.
- Nicknames for amphetamines include "bennies," "black beauties," and "speed."



Methylphenidate



- Methylphenidate is a stimulant found in the ADHD drugs Ritalin, Concerta, Metadate, and Methylin.
- Its nicknames include "MPH," "R-ball," "Skippy," "the smart drug," and "vitamin R."



RITALIN

Just Not Enough

Pseudoephedrine

Pseudoephedrine Blister Package

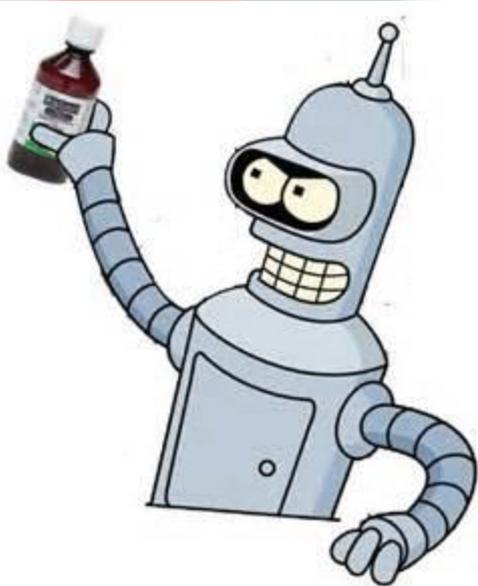


- Pseudoephedrine is commonly found in nonprescription cold medicines.
- It's used as an ingredient for making the illegal drug methamphetamine ("meth").
- Now there are laws limiting the amount of pseudoephedrine-containing drug products that can be bought at a time.



Dextromethorphan (DXM)

Dextromethorphan (Robitussin-DM)



- Active ingredient in many nonprescription cough and cold medicines
- most commonly abused OTC medications
 - 6.6 percent of high school seniors took cough syrup "to get high."
- Euphoria and impaired judgment , nausea and vomiting, loss of coordination, and increased heart rate.
- can act like PCP or ketamine, producing dissociative or out-of-body experiences
- DXM's street names include "Orange Crush," "Triple Cs," "Dex," "Robo," and "Skittles."

Methamphetamine, cocaine and other stimulants

This class of drugs includes amphetamines, methamphetamine, cocaine and methylphenidate (Ritalin).

Signs of use and dependence can include:

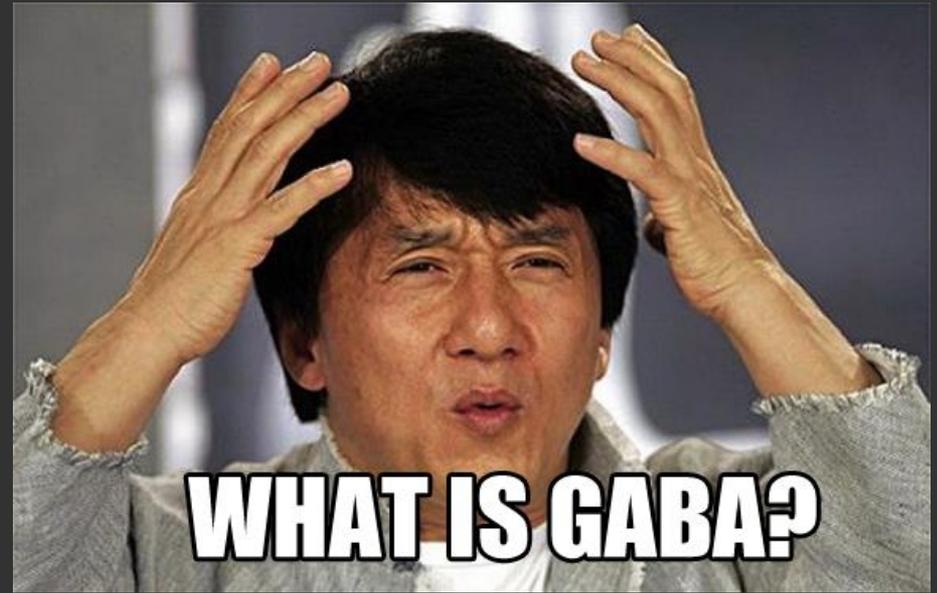
- Euphoria
- Decreased appetite
- Rapid speech
- Irritability
- Restlessness
- Depression as the drug wears off
- Nasal congestion and damage to the mucous membrane of the nose in users who snort drugs
- Insomnia
- Weight loss
- Increased heart rate, blood pressure and temperature
- Paranoia
- Methamphetamine, also known as "meth," is a particularly dangerous drug. It's highly addictive and causes a number of short-term and long-term health consequences. Methamphetamine is relatively inexpensive and widely available.

Methamphetamine, cocaine and other stimulants

Can cause high blood pressure, racing heart, altered mental status, agitation and aggression

Seizure, muscle breakdown, renal failure, stroke

Agitated Delirium



Sedative Hypnotics

Benzodiazepines

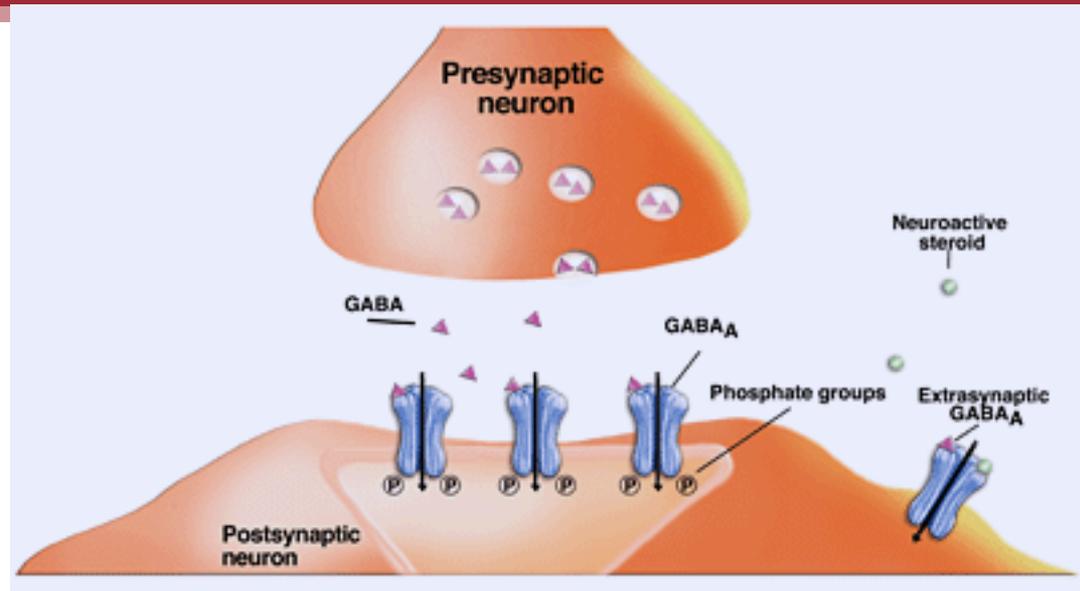
valium, xanax

Barbituates

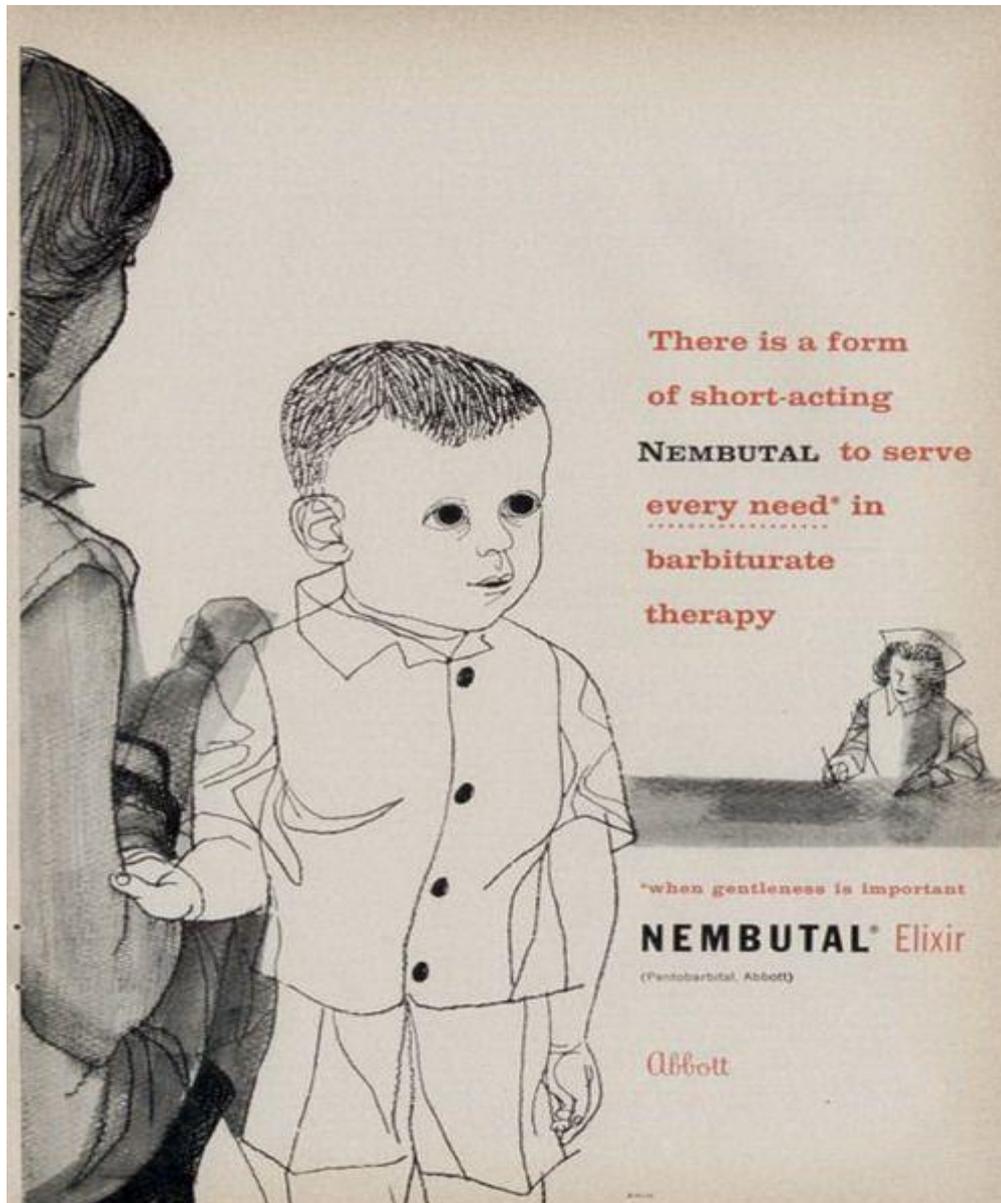
Phenobarbital

Others

Ambien, GHB



Barbiturates



- Prescribed to ease anxiety or promote sleep, seizure control.
- Slang for barbituates includes "barbs," "reds," red birds," "phennies," "tooies," "yellows," and "yellow jackets."

Phenobarbital 100 mg



Seconal 100 mg



Nembutal 100 mg



Mebaral 32 mg



Benzodiazepines: Valium, Xanax



- CNS depressants.
- Used to treat anxiety, acute stress reactions, panic attacks, convulsions, and sleep disorders (typically for short-term use).
- Like other depressants, they have reasonable uses but may be abused.



List of benzodiazepines

Half life (hrs)	Generic name	Brand names
10-14	Alprazolam	Xanax, Kalma
22-54	Clonazepam	Rivotril, Paxam
20-48	Diazepam	Valium, Antenax, Ducene
25-30	Flunitrazepam	Rohypnol, Hypnodorm
15-38	Nitrazepam	Mogadon, Alodorm
6-10	Oxazepam	Serepax, Murelax, Alepam
5-10	Temazepam	Normison, Temaze, Euhypnos, Temtabs, Nocturne

Sleep Medicines



- Newer sleep medicines are non-benzodiazepines but act on GABA-Chloride complexes.



AMBIEN

Messing with your head since 1991

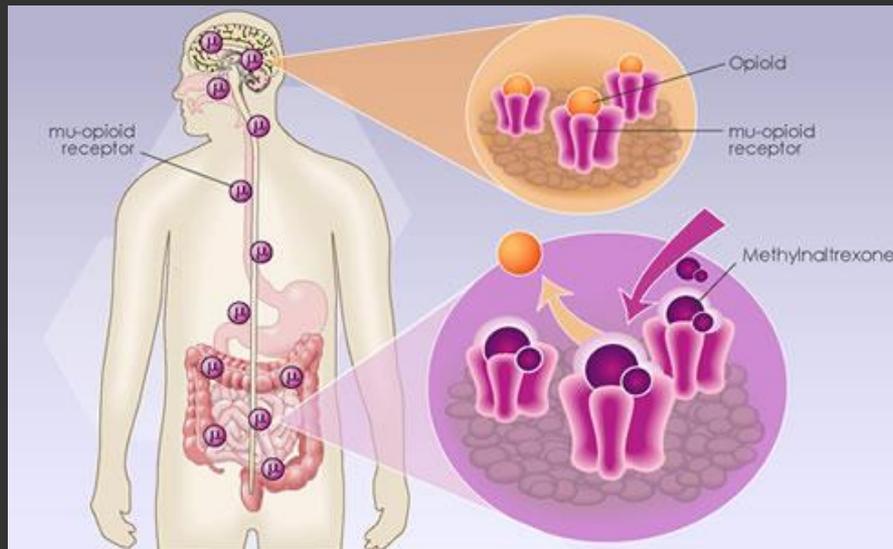
- These drugs may have less potential for addiction than other depressants.

Sedative Hypnotics

Central Nervous System Depressants.

Signs of use and dependence can include:

- Drowsiness
- Slurred speech
- Lack of coordination
- Memory problems
- Confusion
- Slowed breathing and decreased blood pressure
- Dizziness
- Depression



Opiates

Morphine

Codeine

Oxycodone

Hydrocodone

Fentanyl

Suboxone

Methadone

Codeine and Morphine



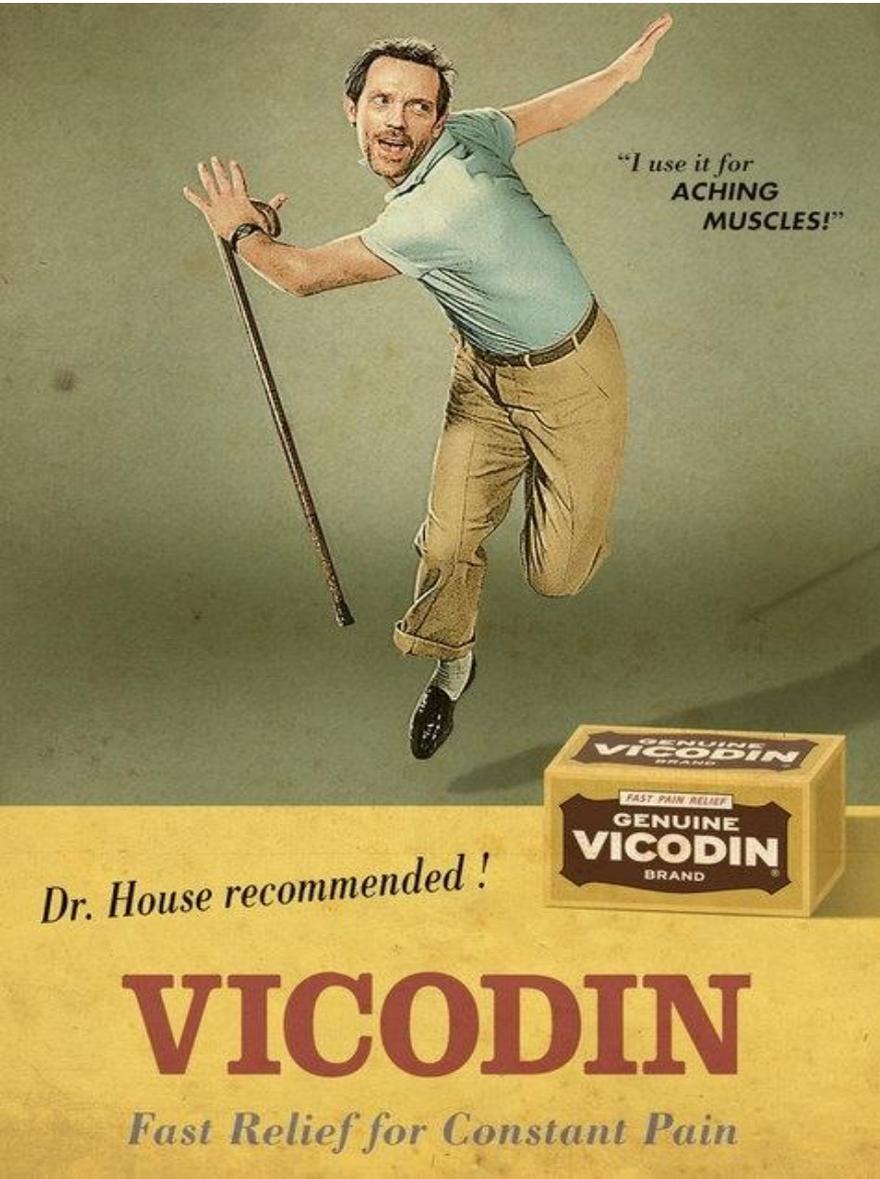
- Pain relievers are another group of prescription drugs that are commonly abused.
- Brands of morphine include Avinza, Kadian, MS Contin, Oramorph, and Roxanol.
- Morphine is typically prescribed for severe pain; codeine, for milder pain.
- Street names for codeine include "Captain Cody" and "Cody." Slang for morphine includes "M" and "Miss Emma"



DRUGS

Doing nothing has never been so amazing.

Hydrocodone



"I use it for
**ACHING
MUSCLES!**"

Dr. House recommended!

VICODIN

Fast Relief for Constant Pain

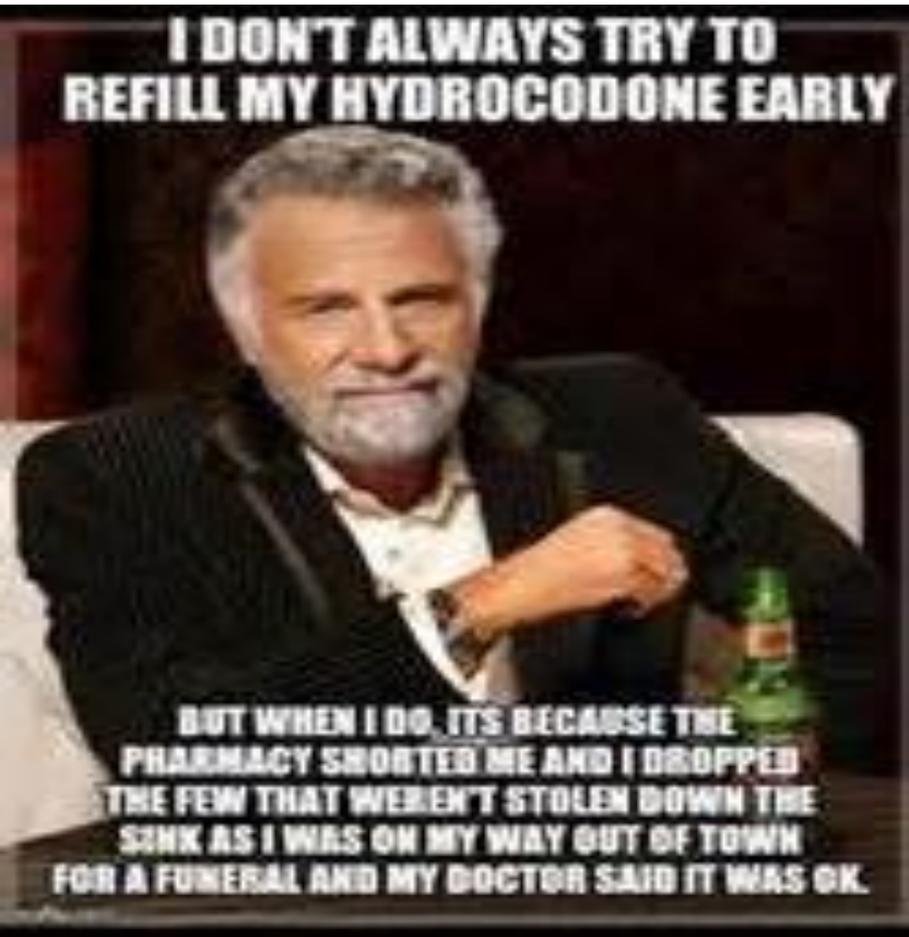
GENUINE
VICODIN
BRAND

FAST PAIN RELIEF

The advertisement features a man in a light blue polo shirt and khaki pants, leaning forward with one arm raised and a cane in his other hand, as if in pain. A box of Vicodin is shown in the bottom right corner. The background is a plain, light-colored wall.

- Vicodin, Lortab, Norco, Loricet contain the opioid hydrocodone plus acetaminophen.
- Opioids can cause drowsiness, constipation, and may depress breathing, depending upon how much you take.
- Vicodin's street names include "vike" and "Watson-387."

Oxycodone



- OxyContin, Percocet, Percodan, and Roxicodone share an active ingredient, oxycodone, which is an opioid pain reliever.
- These drugs aren't identical;
- Percocet also contains acetaminophen, while Percodan also contains aspirin.
- Street names include "oxy," "O.C.," and "oxycotton" for OxyContin and "percs" for Percocet or Percodan.



BAYER

PHARMACEUTICAL PRODUCTS.

We are now sending to Physicians throughout the United States literature and samples of

ASPIRIN

The substitute for the Salicylates, agreeable of taste, free from unpleasant after-effects.

HEROIN

The Sedative for Coughs,

HEROIN HYDROCHLORIDE

Its water-soluble salt.

You will have call for them. Order a supply from your jobber.

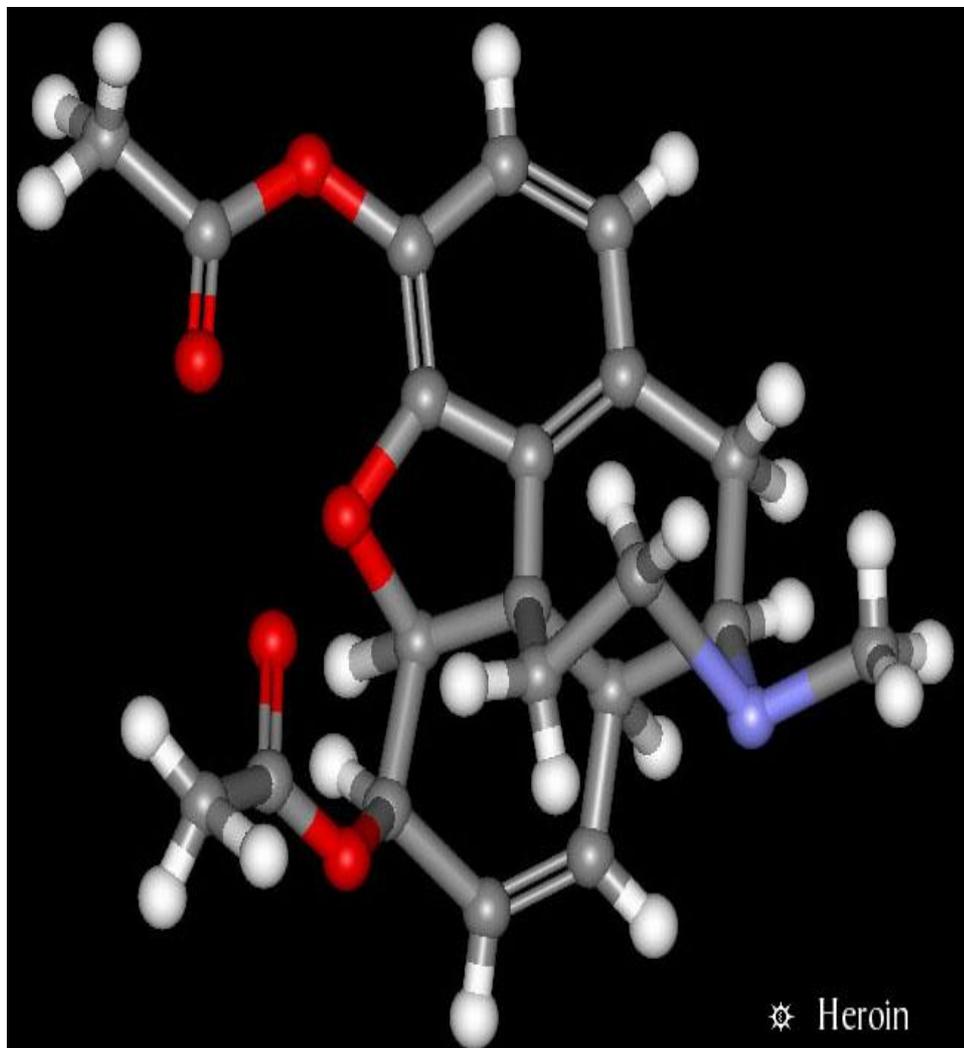
Write for literature to

FARBENFABRIKEN OF ELBERFELD CO.

40 Stone Street, New York,

SOLE AGENTS

Heroin



⊗ Heroin

Heroin's History

- First synthesized from morphine in 1874,
 - Not extensively used in medicine until the beginning of this century.
 - 1898- commercial production
 - Potential for addiction for years.
 - The first comprehensive control of heroin in the United States was established with the Harrison Narcotic Act of 1914.

Opium



- Opium grows in Southeast Asia, Southwest Asia, and Western Hemisphere (Mexico, Guatemala, and Colombia)
- Converted into heroin in laboratories.
- Opium grown in Afghanistan and South West Asia is generally consumed in Asian and European markets.
- North and South America gets theirs from Columbia and Mexico.
- Also known as:
 - as smack, junk, brown sugar, dope, horse, skunk and other names is derived from the resin of the poppy

Heroin

- Pure heroin is a white powder with a bitter taste.
- Most illicit heroin is a powder form which may vary in color from white to dark brown
 - impurities left from the manufacturing process or the presence of additives
- Pure heroin is rarely sold on the street.
 - A "bag" --slang for a single dosage unit of heroin--may contain 100 mg of powder, only a small portion of which is heroin.
- Traditionally the purity of heroin in a "bag" has ranged from one to ten percent.
 - More recently, heroin purity has ranged from one to ninety-eight percent, with a national average of thirty-five percent.

“Black Tar Heroin”

- Western United States.
- Crude processing methods used to illicitly manufacture the substance in Mexico.
 - sticky, like roofing tar or hard like coal, and its color may vary from dark brown to black.
- Purities ranging from twenty to eighty percent.
- Dissolved, diluted and injected.



Heroin

- The typical heroin user today consumes more heroin than a typical user did just a decade ago.
- Until recently, heroin in the United States almost exclusively was injected either intravenously (rapid onset 7-8 seconds), subcutaneous (skin-popping), or intramuscularly (slower onset 5-8 minutes).
- Injection is the most practical and efficient way to administer low-purity heroin. The availability of higher purity heroin has meant that users now can snort or smoke the narcotic (onset 10-15 min.).
- Evidence suggests that heroin snorting is widespread or increasing in those areas of the country where high-purity heroin is available, generally in the northeastern United States.

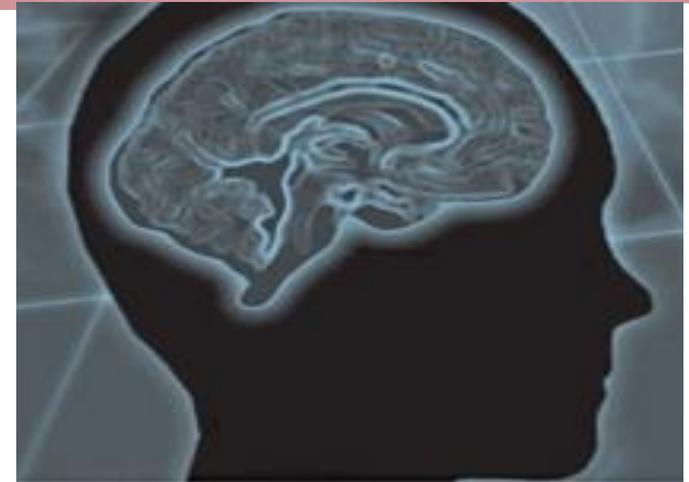
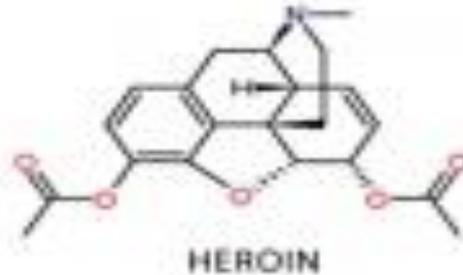
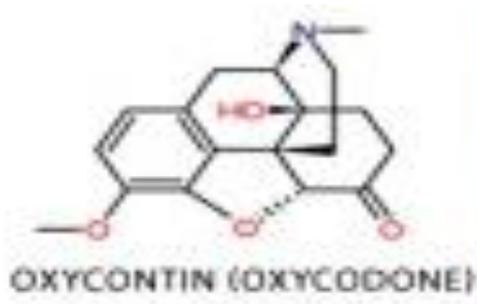


What's the dangers, risk , signs and symptoms?

Signs of narcotic use and dependence can include:

- Reduced sense of pain
- Sedation
- Respiratory Depression
- Miosis (pinpoint pupils)
- Depression
- Confusion
- Constipation
- Slowed breathing
- Needle marks (if injecting drugs)

Dangers Of Opiates



Opioids bind to opioid receptors found in the brain, spinal cord, gastrointestinal tract, and other organs in the body, reducing perception of pain.

Opioids can also produce drowsiness, mental confusion, nausea, constipation, and, depending upon the amount of drug taken, can depress respiration.

Opiates may cause severe withdrawal symptoms and may occur if drug use is suddenly reduced or stopped. These symptoms can include restlessness, muscle and bone pain, insomnia, diarrhea, vomiting, cold flashes with goose bumps ("cold turkey"), and involuntary leg movements.

Potential risks involved with long-term use, such as the development of drug tolerance (and the need for escalating doses), hyperalgesia (increased pain sensitivity), and addiction.

Effects of Heroin

Long-term effects of Heroin

Central

- Addiction
- Tolerance
- Dependence

Circulatory

- Collapsed veins

Heart

- Infection of heart lining and valves

Respiratory

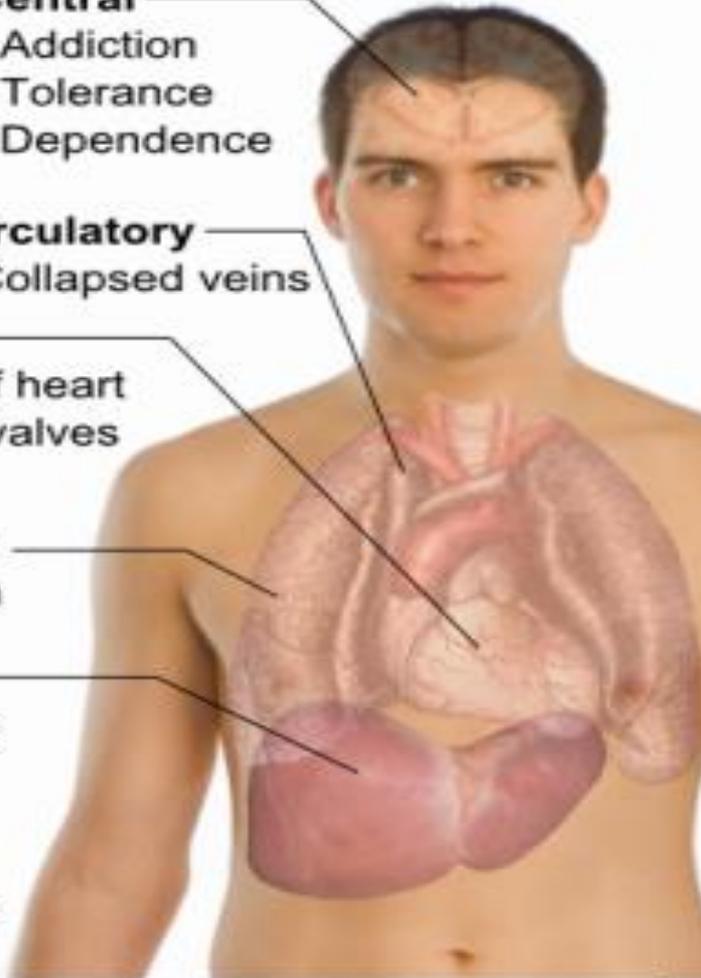
- Pneumonia

Liver

- Decreased function

Systemic

- Abscesses



PRESCRIPTION OPIOIDS

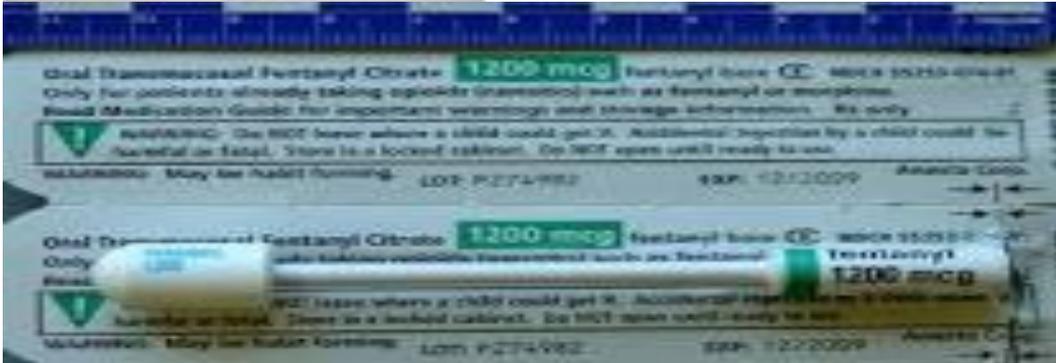
- Increased Falls and fractures
- Fatal overdose from respiratory depression. Potentiation
- Tolerance, physical dependence, withdrawal, and opioid dependence
- Drowsiness
- Increased pain sensitivity (hyperalgesia)
- Sexual dysfunction and other endocrine effects
- Constipation/Nausea/vomiting
- Chronic dry mouth
- Dry skin/itching/pruritus

Fentanyl (Fentora, Duragesic, Atiq)

Fentanyl is approximately 50-100 times more potent than morphine.

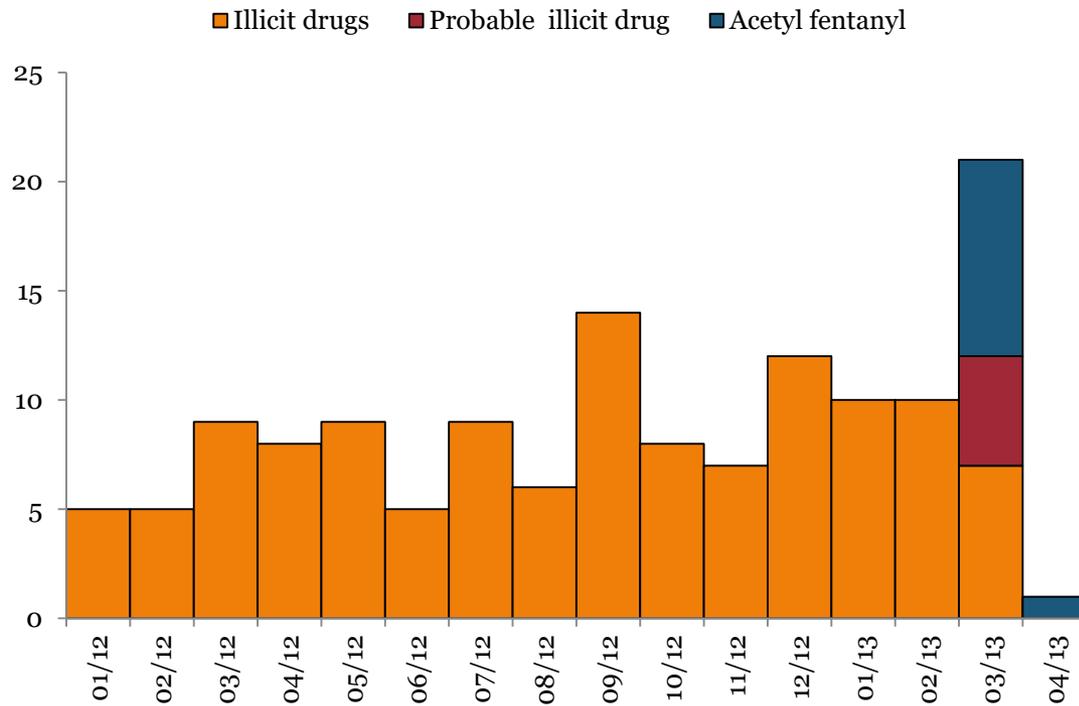
Historically it has been used to treat breakthrough pain and is commonly used in pre-procedures as a pain reliever as well as an anesthetic in combination with a benzodiazepine.

- Apache, China girl, China white, dance fever, friend, goodfella, jackpot, murder 8, TNT, Tango and Cash



Acetyl Fentanyl

Epi Curve



Methadone

- Long term addiction management
- Daily medication substituted for opiate
 - Used in patients where abstinence has failed
 - Decreases drug craving
 - Prevents withdrawal
 - Allows patients to rejoin society
- Long term pain management
- Long half life
- Builds up in system
- Can be lethal to opiate naive users (children)
- Patients are still addicted to opiates

Suboxone

- Suboxone contains a combination of buprenorphine and naloxone.
 - Buprenorphine is an opioid medication.
 - Naloxone is a narcotic antagonist that reverses the effects of other narcotic medicines
 - It is used to treat opioid dependence in conjunction with counseling and behavioral therapy.
- Subutex (Buprenorphine) does not contain the Naloxone component



Florida's increasing heroin use should not be attributed to the crackdown on pill mills and reductions in doctor shopping. Without these supply-side strategies, heroin use would have likely increased even more, because prescription opioid abusers constitute the breeding ground for the nation's heroin epidemic in the 21st Century.

However, Florida's failure was in not expanding treatment and prevention resources while enforcing prescription diversion control.

Alcoholism and Drug Abuse Weekly May 4, 2015

Prevention Strategies – Overdose Intervention

- **Naloxone Distribution** for opioid overdose victims. The *potential* for direct intervention to save lives.



- **Naloxone Nasal Spray Development**

Needle-free, unit-dose, ready-to-use opioid overdose antidote

NIDA STTR Grantee – AntiOp, Inc., Daniel Wermeling, CEO
Contact: E-mail: dpwermeling@gmail.com, Tel:
859-221-4138



Identifying a Suspicious Pill



- Found a random pill and want to know what it is?
WebMD's Pill Identification Tool may help. But because there are hundreds of drugs and thousands of pills and tablets of all shapes, colors, and sizes, try taking the pill to a pharmacist to get help identifying it.
- Poison Control:
1-800-222-1222

WebMD Identifying tool



WebMD Home | Pill Identifier

Health A-Z | Drugs & Supplements | Living Healthy | Family & Pregnancy | News & Experts

Save | Email a Friend

Drugs and Medications Center

- Find a Drug
- My Medicine
- Pill Identifier
- Interaction Checker
- Drugs & Medications A-Z
- Drugs & Medical Conditions
- Latest Drug News
- Drugs Information on Mobile
- Find a Vitamin
- Find a Pharmacy
- Medication Evaluator

Common Drugs

- Adderall
- Celexa
- Cipro
- Cymbalta
- Flexeril
- Hydrocodone
- Lexapro
- Lisinopril
- Medrol
- Microzide
- Mobic
- Naproxen
- Neurontin
- Prednisone
- Prilosec
- Prozac
- Seroquel
- Synthroid
- Tramadol
- Trazodone
- Vicodin
- Wellbutrin
- Xanax
- Zocor
- Zoloft

Vitamins & Supplements

Pill Identification Tool

The display and use of drug information on this site is subject to express terms of use. By continuing to view the drug information, you agree to abide by such terms of use.



Having trouble identifying your pills? Enter the shape, color, or imprint of your prescription or OTC drug. Our pill finder will display pictures that you can compare to your pill.

Identify Your Pill or Medication

Enter any imprint:

Select the color:

Select the shape:

[Reset Selections](#) [Get Started](#)

Find a Drug

Drug Name (i.e. aspirin) [Go](#)

Medical Condition (i.e. diabetes)

Commonly Abused Prescription Drugs

Concerned about misuse of prescription drugs? View the pictures of Rx medications and click on images of drugs for medical information about proper uses. For more pill images view as a slideshow.

[Vicodin Oral Information](#)



Image of VICODIN ES TABLET [view larger picture](#)

[Xanax Oral Information](#)

[OxyContin Oral Information](#)



Image of OXYCONTIN 20 MG TABLET SA [view larger picture](#)

[Valium Oral Information](#)

[Klonopin Oral Information](#)



Image of KLONOPIN 1 MG TABLET [view larger picture](#)

[Roxicet Oral Information](#)

Related Articles

- Overview of Prescription Drug Abuse
- RX Abuse common and Dangerous
- Study: Prescription Pain Pill Abuse up 400%
- Prescription Drug Abuse: Who gets addicted and why?
- Drug Abuse on the rise in baby boomers
- Survey Reveals RX Drug Abuse by Teens
- Counseling and Addiction

Hot Topics

- Is Your Eczema Under Control?
- 11 Foods That Stain Your Teeth
- How to Stop Grinding Your Teeth
- Assess Yourself: Check Your MS Symptoms
- Bleeding Gums May Signal Trouble
- Is Your Teen Struggling With ADHD Symptoms?
- Get the Facts About ADHD in Kids
- Do ADHD Kids Need Stricter Rules?
- Better Study Habits for Your ADHD Kid
- What Childhood ADHD Symptoms Look Like

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flushing, rash, shortness of breath, and chest pain. These are not all of the possible side effects of COPAXONE®. For a complete list, ask your doctor or pharmacist. Tell your doctor

Identifying a Suspicious Pill
Found a random pill and want to know what it is? WebMD's Pill Identification Tool may help. But because there are hundreds of drugs and thousands of pills and tablets of all shapes, colors, and sizes, try taking the pill to a pharmacist to get help identifying it.

Synthetic and Emerging Drugs of Abuse

A decorative graphic consisting of a solid red horizontal bar that spans the width of the slide. Below this bar, on the right side, there are several horizontal lines of varying lengths and colors, including white and light red, creating a stepped or layered effect.

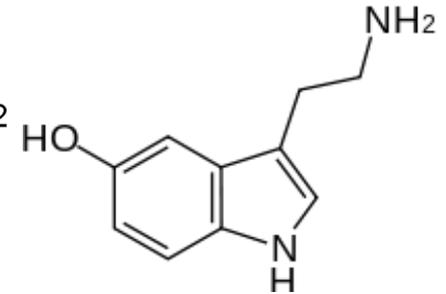
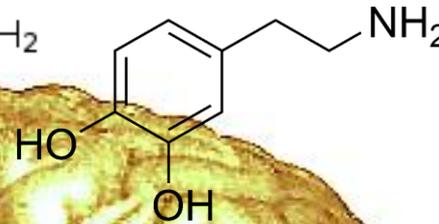
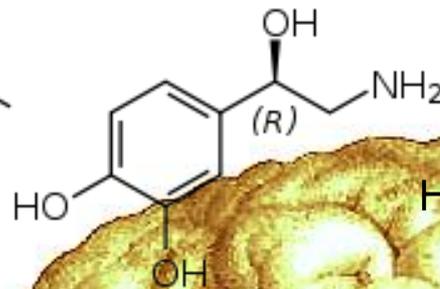
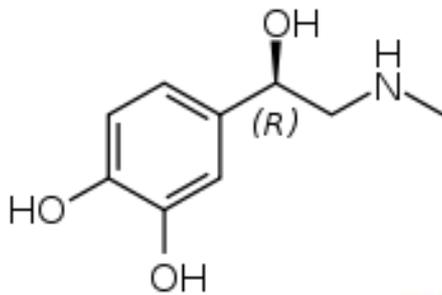
Illicit Chemistry 101



- How do I increase drug levels in the brain?
- How do I maximally stimulate pleasure and hallucination centers?
- How do I stimulate addiction and reward centers?



Epinephrine Norepinephrine Dopamine Serotonin

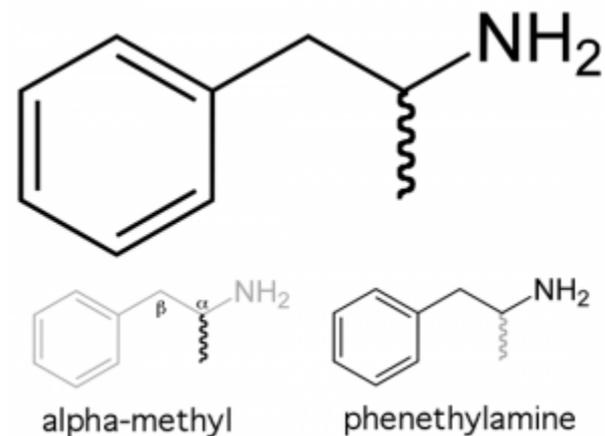
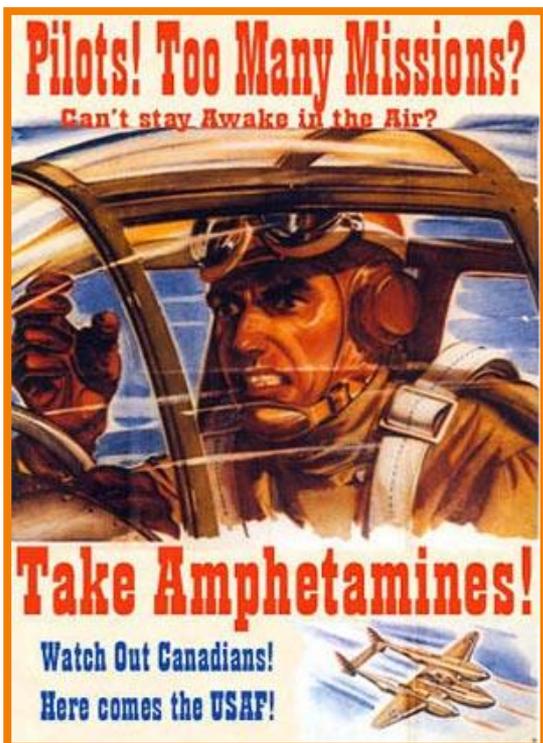


Epinephrine
Increased heart rate

Norepinephrine
Increased blood pressure
Alertness
Concentration

Dopamine
Enactogenic effects
Locomotor effects
Pleasure
Reward

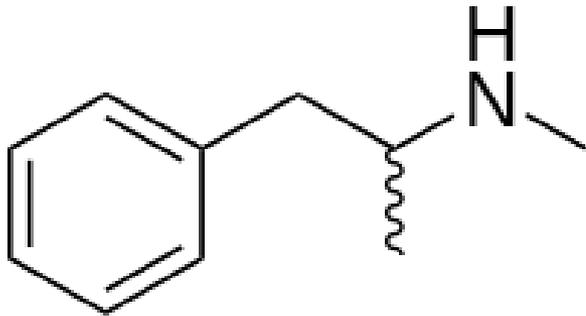
Serotonin
Enactogenic effects
Hallucinations
Compulsion / addiction
Seizures



Adding alkyl chains at the α position:

1. Increases lipophilicity (BBB penetration)
2. Inhibits MAO breakdown
3. Potentiates hallucinogenic properties

Methamphetamine

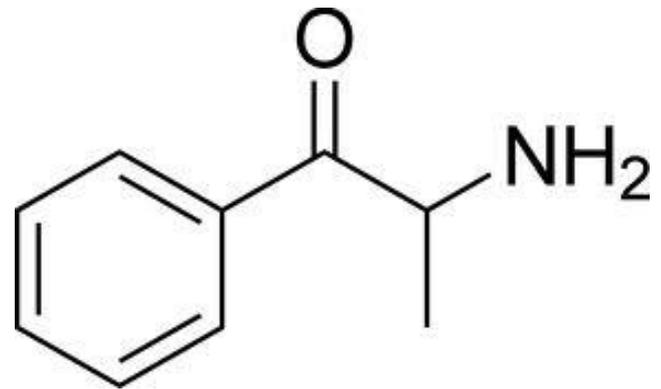


Adding n-substitutions:

1. Decreases sympathomimetic effects
2. Increases lipophilicity
3. Increases duration of action



Catha edulis

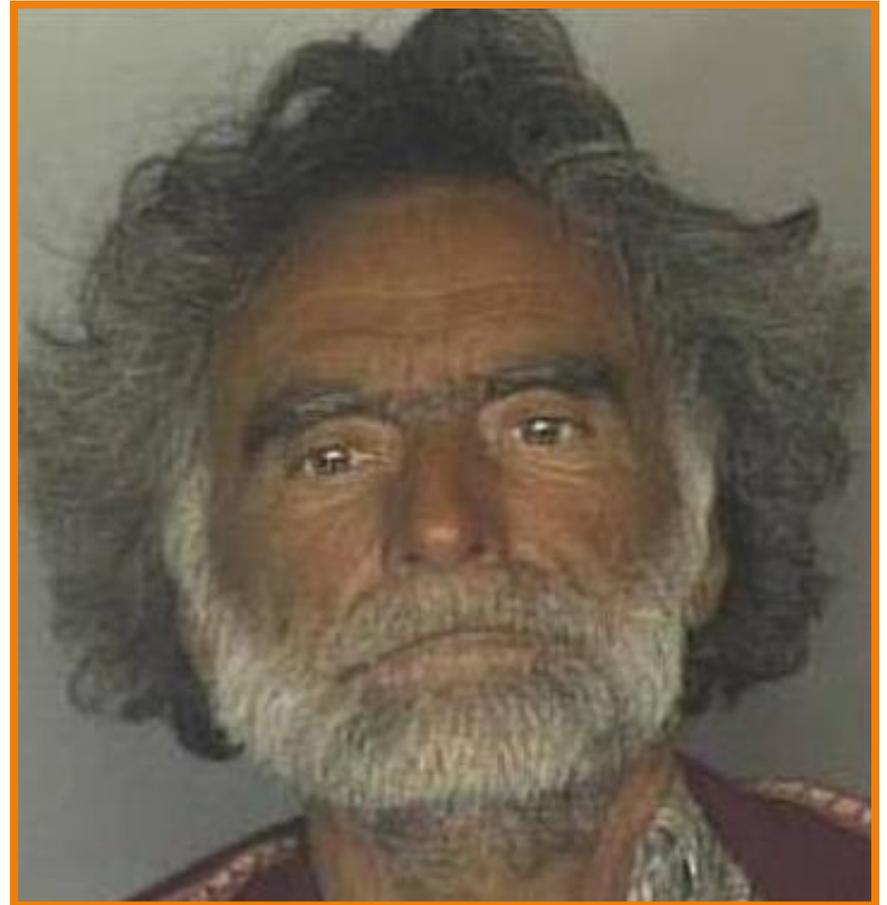


Cathinone

Bath salts are not made from Khat.



Miami Zombie-Cannibal Case



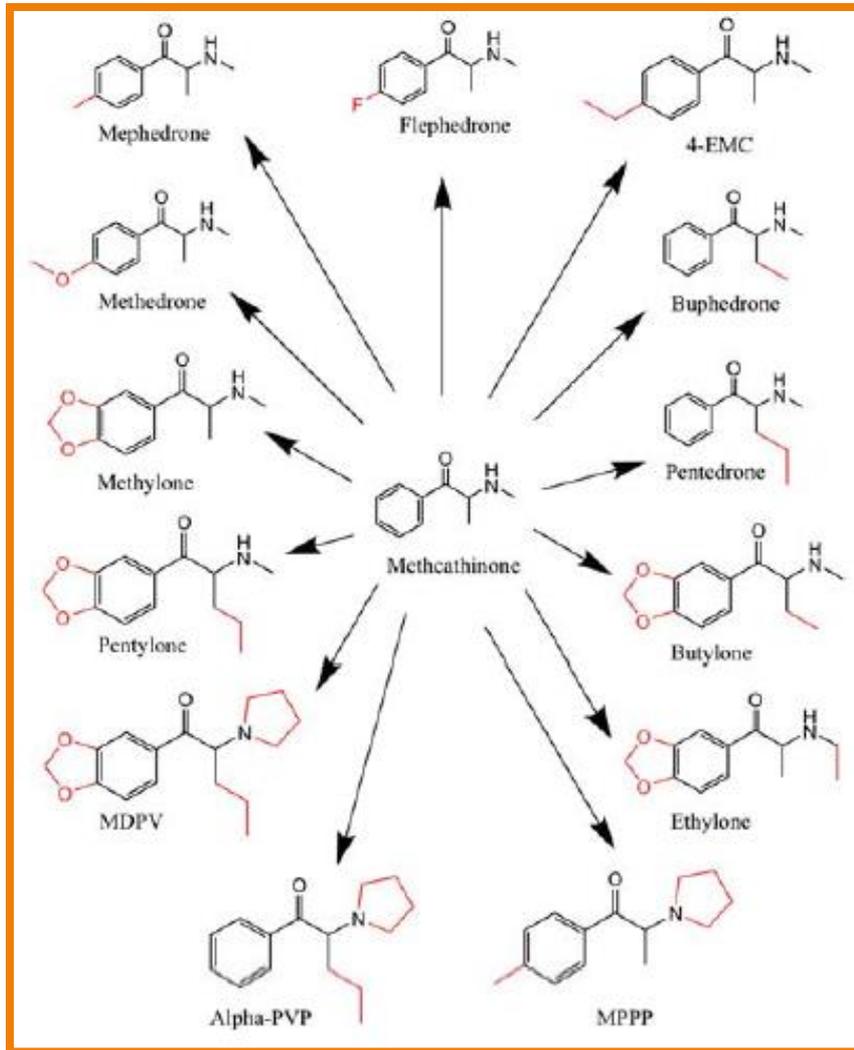
Bath Salts



Bath Salts

<http://cultso.com/artist-takes-every-drug-known-to-man-draws-self-portraits-after-each-use/>

Bath Salts



Bath Salts

Route	Onset	Duration
Insufflation	10-20 min	1-2 hrs
Ingestion	15-45 min	2-4 hrs
Intravenous	10-15 min	30 min



Bath Salts

- Sympathomimetic toxidrome
 - Tachycardia, hypertension, hyperthermia
- Agitation (82%), Violent-combative (57%), Hallucinations (40%)
- Seizures
- Severe Dehydration

12 Kinds of Synthetic Cathinones In Florida Crime Labs in 2014

- **Cathinones – Synthetic Khat**

- **MDPV**
- **Methylone**
- ***Alpha-PVP***
- ***Ethylone***
- ***Butylone***
- ***7 Others***



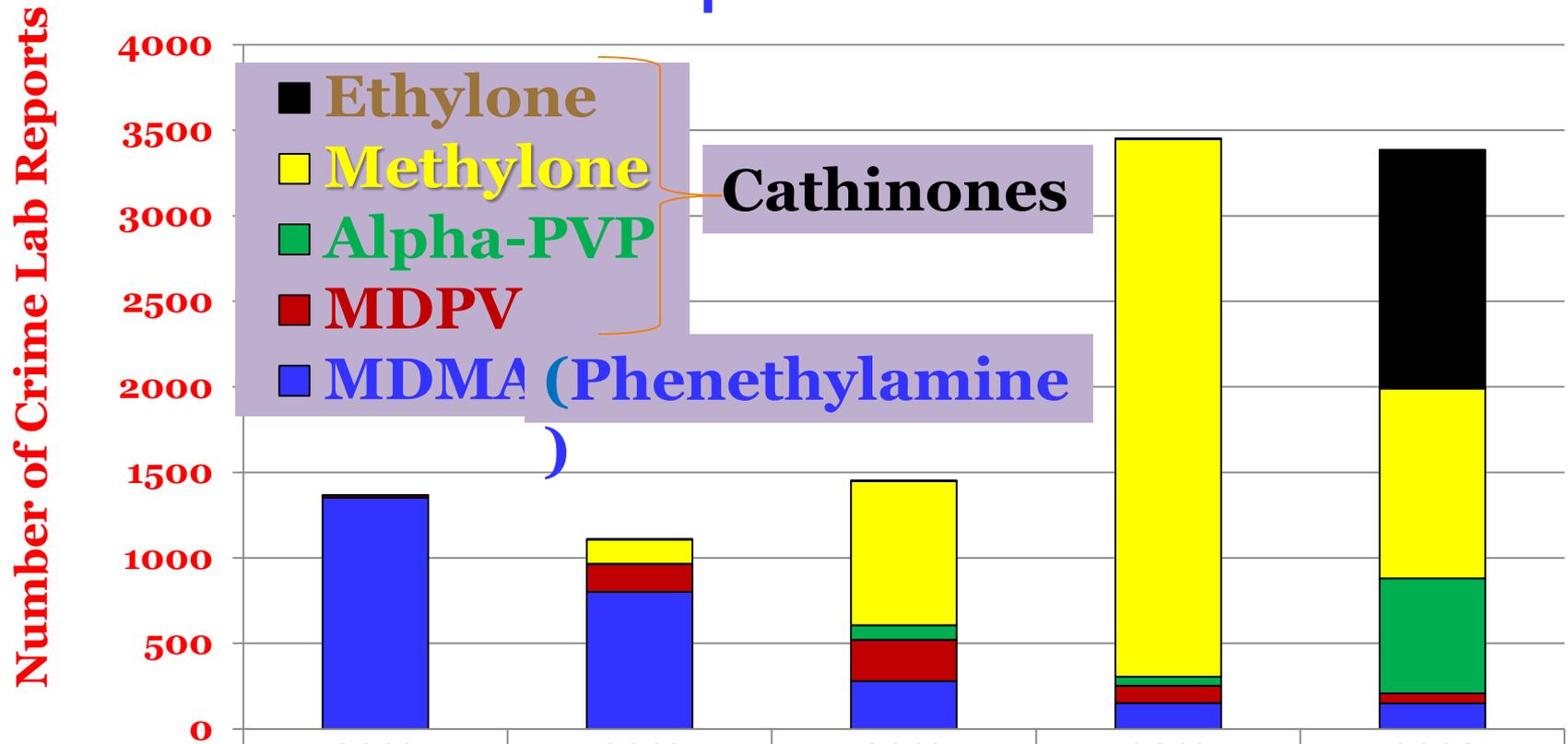


Flakka

Frenzy



The Changing Face of Ecstasy, Molly, Flakka, et al in Florida Crime Lab Reports 2010-2014



	2010	2011	2012	2013	2014
■ Ethylone	0	1	6	4	1396
■ Methylone	1	141	842	3142	1110
■ Alpha-PVP	0	1	85	54	672
■ MDPV	14	163	241	101	58
■ MDMA	1352	802	280	151	150

Source: Analysis of US DEA - National Forensic Laboratory System I

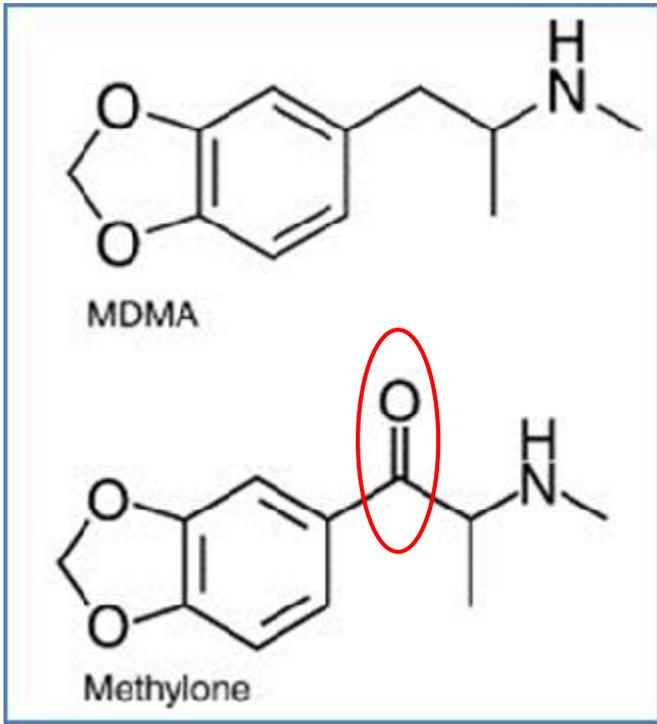
Molly-MDMA

- Molly is an amphetamine which produces effects similar to methamphetamines . The DEA says only 13% of the Molly seized in New York state the last four years actually contained any MDMA, and even then it often was mixed with other drugs (Methylone, MDPV, 4-MEC, 4-MMC, Pentedrone and MePP).

What does Molly do?

- The lab-created chemicals mimic the effects of MDMA; most of them are central nervous system stimulants that cause euphoric highs.
- Physiologically, cause increased HR, BP, sweating, hyperthermia
- Some of the chemicals have been reported to cause intense, prolonged panic attacks, psychosis and seizures.
- After they wear off, the chemicals can cause devastating depression. Several of these compounds have caused deaths.

(Drew Griffin. Nelli Black and Patricia DiCarlo, CNN Investigations)



Molly

**Methylone is
beta-ketone MDMA**



	Purple Chanel MAS03	MDMA	1	Oct 14, 2015	Oct 14, 2015	San Francisco, CA	255 mg, 8.2 x 4.9	EcstasyData.org
	Molly MAS02	Cocaine Methamphetamine Levamisole Methylone	5 1 trace trace	Oct 14, 2015	Oct 14, 2015	Philadelphia, PA	200 mg, 20.3 x 6.7	EcstasyData.org
	Orange Capsule MAS01 <i>(Not Sold As Ecstasy)</i>	5-MeO-DIPT	1	Oct 14, 2015	Oct 14, 2015	Philadelphia, PA	52 mg, 15.3 x 5.1	EcstasyData.org
	Ketamine Powder BAD53 <i>(Not Sold As Ecstasy)</i>	Deschloroketamine Ketamine	16 1	Oct 14, 2015	Oct 14, 2015	San Francisco, CA	300 mg, - x -	EcstasyData.org
	MXE PTX5G <i>(Not Sold As Ecstasy)</i>	Methoxetamine	1	Oct 14, 2015	Oct 14, 2015	Fort Lauderdale, FL	100 mg, - x -	EcstasyData.org
	5-MAPB Powder MSM81 <i>(Not Sold As Ecstasy)</i>	5-EAPB	1	Oct 14, 2015	Oct 14, 2015		200 mg, - x -	EcstasyData.org
	Etizolam Powder BAP12 <i>(Not Sold As Ecstasy)</i>	Alprazolam	1	Oct 14, 2015	Oct 14, 2015	Santa Rosa, CA	188 mg, 21.0 x 7.8	EcstasyData.org
	Molly CAR12 <i>(Not Sold As Ecstasy)</i>	Etizolam	1	Oct 14, 2015	Oct 14, 2015	Santa Rosa, CA	160 mg, 21.1 x 7.5	EcstasyData.org
	Ecstasy Powder 6917A	None Detected	1	Oct 14, 2015	Oct 14, 2015	Longview, WA	500 mg, - x -	EcstasyData.org
	Capsule #2 N33DU	MDA Methylsulfonylmethane	1 trace	Oct 14, 2015	Oct 14, 2015	Oakland, CA	90 mg, 13.7 x 5.2	EcstasyData.org
	Capsule #1 LOV3U	MDA	1	Oct 14, 2015	Oct 14, 2015	Oakland, CA	100 mg, 13.9 x 5.2	EcstasyData.org

Ethylone Candy



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5

**Source: Metro-Dade
Police Department
Crime Lab**

“Flakka”

- *Flaca – Skinny*
- *Flaka – Beautiful, elegant woman who charms all*
- *Elsewhere called “Gravel”*



alpha-PVP

a-pyrrolidinopentiophenone

a-pyrrolidinovalerophenone

A-PVP



South Florida
Crime a-PVP Lab

Cases:

- **2012 - 2**
- **2013 - 6**
- **2014 - 576**



Toxic Effects:

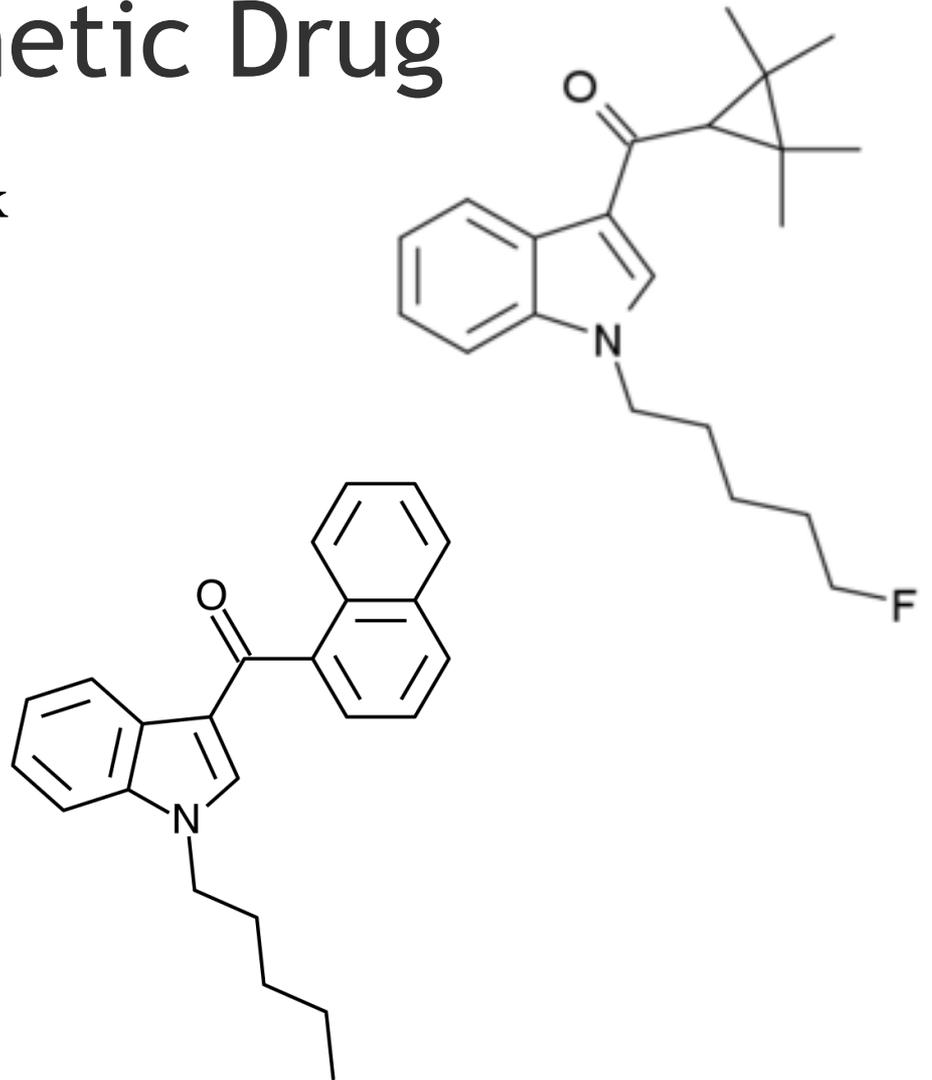
- **Tachycardia,**
- **Agitation,**
- **Psychosis,**
- **Violent behavior,**
- **Excited Delirium**
 - **Hyperthermia**
 - **Kidney failure**
 - **Death**

K2 Spice



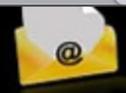
K2 Spice - Synthetic Drug

- Synthetic chemicals that look to the brain like marijuana.
- Sprayed onto plant material for smoking.
- Give marijuana-like high
- Sold online, headshops
- Legal grey area





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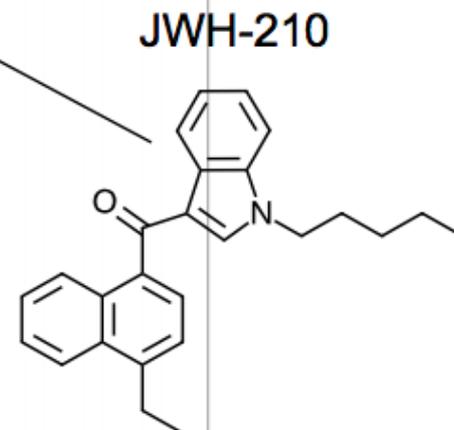
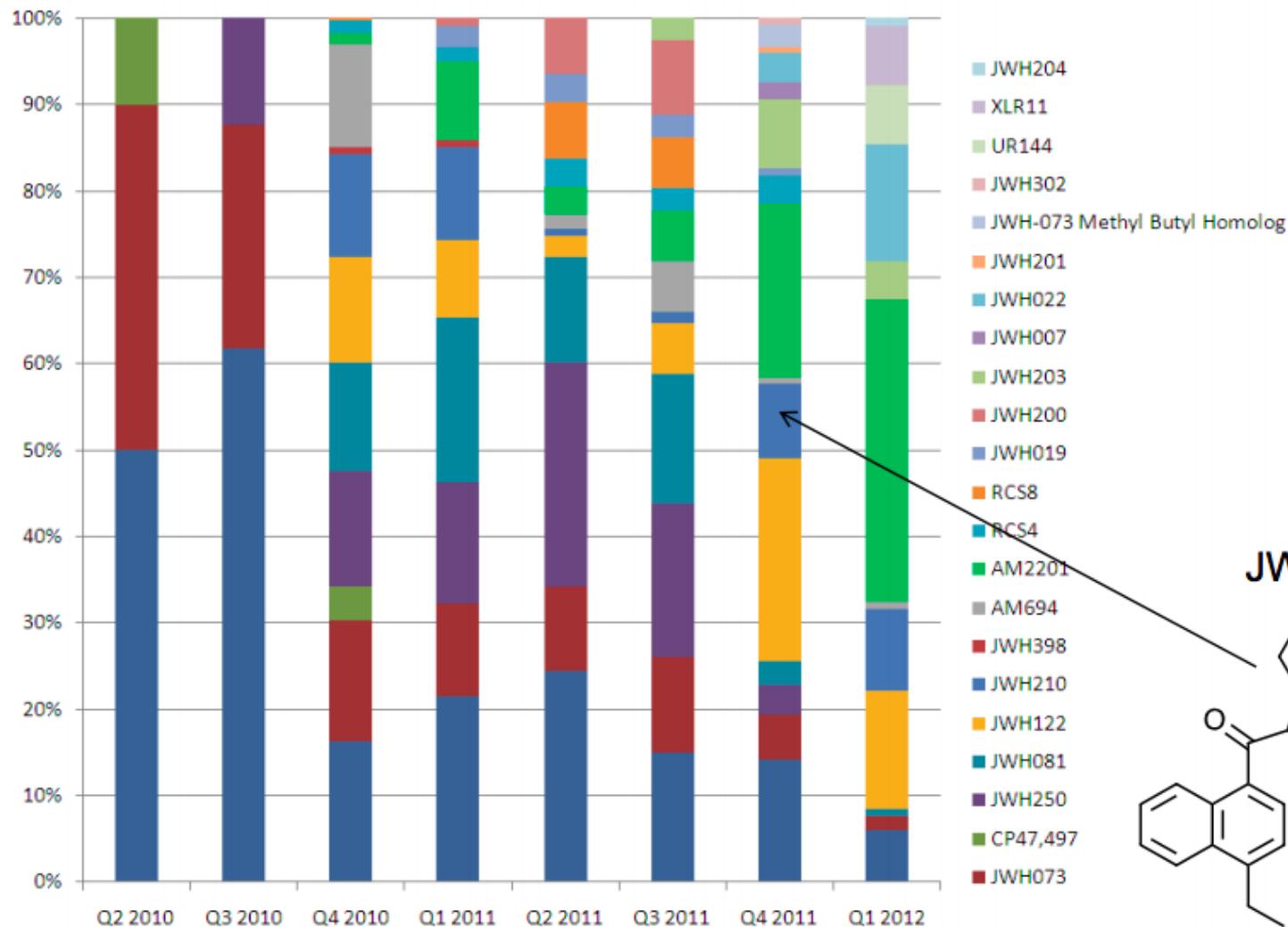
Kratom

Salvia



K2 Spice - Synthetic Drug

- Potent Cannabinoid
 - Multiple Formulations
- Reports of Seizures and Psychosis at increased rates compared to organic Marijuana
- End Organ Damage
- Seizures
- Respiratory depression
- Combativeness



22 Kinds of Synthetic Cannabinoids In Florida Crime Labs in 2014

- **JWH Series – (John W. Huffman) 8 types**
- **AM 2201**
- **UR-144**
- **XLR-11**
- **PB-22**
- **AB-FUBINACA**
- **AB-PINACA**



Pharmacology of Synthetic

- **Effects almost immediate**
- **Onset of action is seconds to minutes**
- **Duration of effects: last 30 minutes**
– **1 hour**
- **Tolerance and Dependency develops**
 - **More drug needed for same effect**
- **Full and potent agonists at CB₁ Receptors**
- **Greater receptor affinity than THC**
(3 - 10 Xs)



Quest
Diagnostics

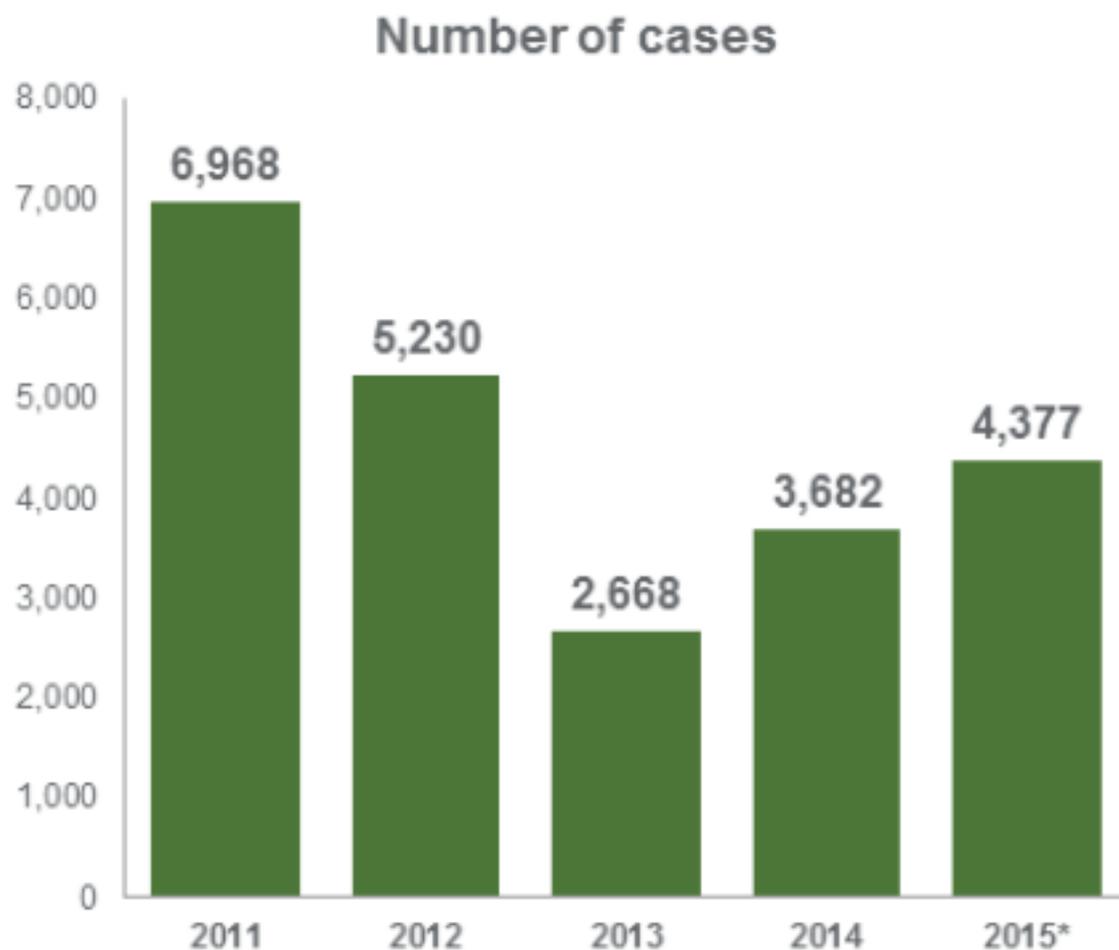
www.questdiagnostics.com

- **As compared to THC, synthetic**

AAPCC – synthetic cannabinoids

In 2015, through July 6, poison centers received reports of 4,377 exposures to synthetic marijuana.

*2015 data through July 6



Source: American Association of Poison Control Centers

“Budder” Beware: Dangers of Marijuana Wax



- **Marijuana Wax**
- **“Budder,”** or
- **Butane hash oil, or even**
- **“ear wax hash”**

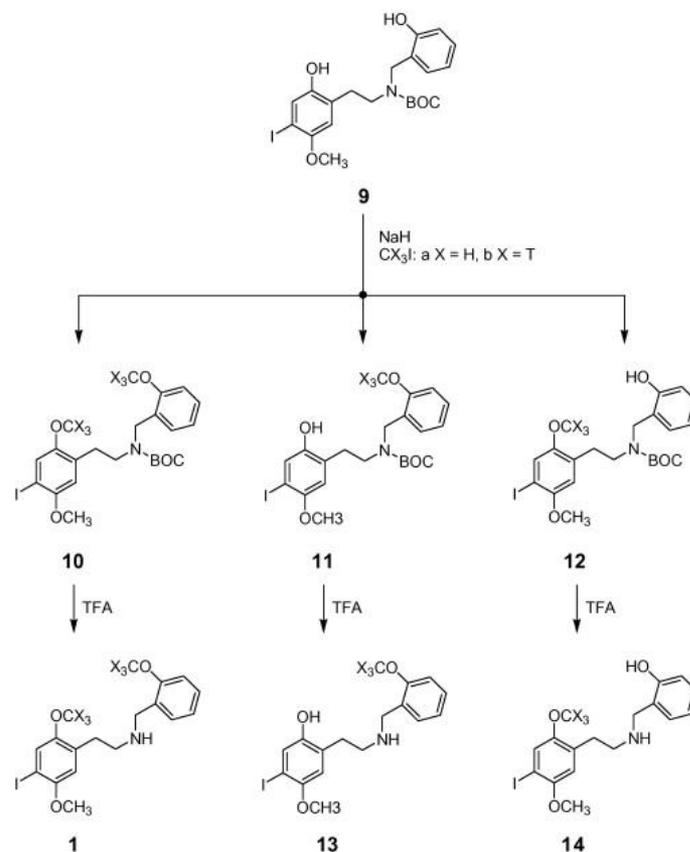
Produced by soaking marijuana plant material in a solvent such as butane which extracts various cannabinoids of the plant.

NBOME



NBOMe

- Discovered in 2003
- Initially surfaced in Russia
- Schedule 1 as of 2013



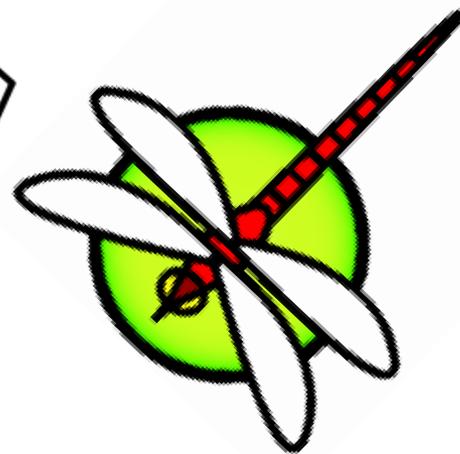
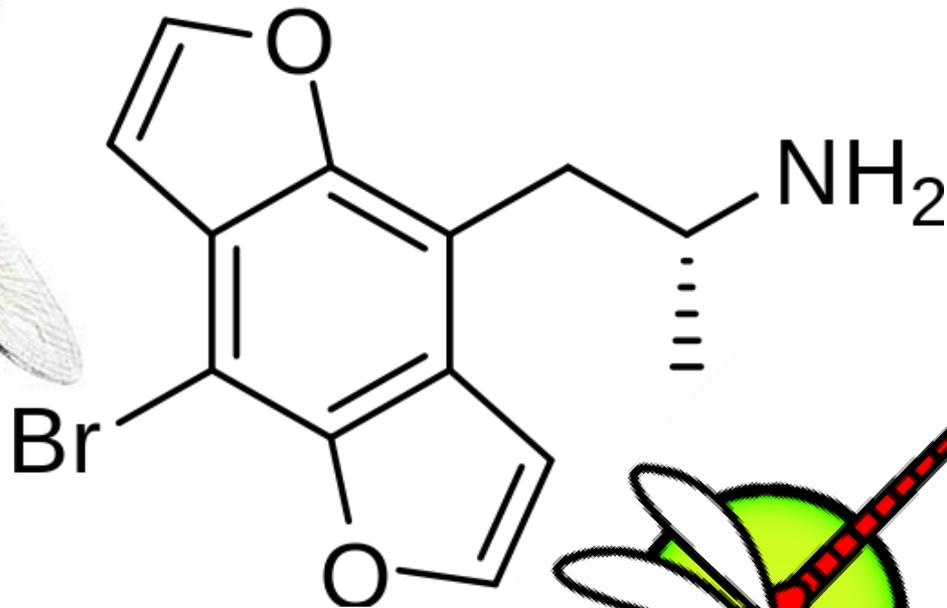
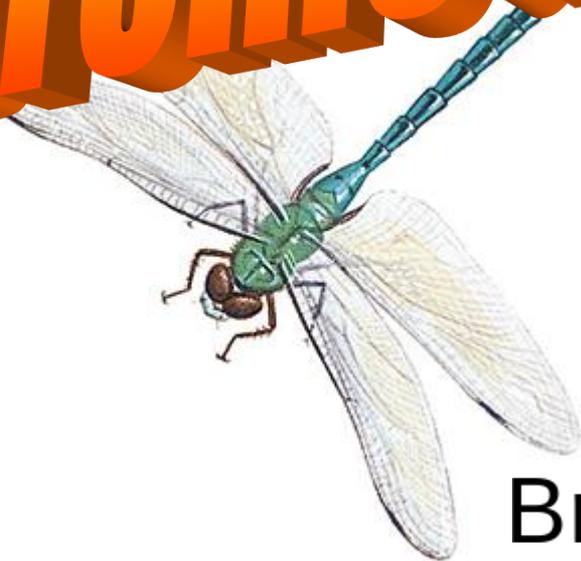
Clinical Effects:

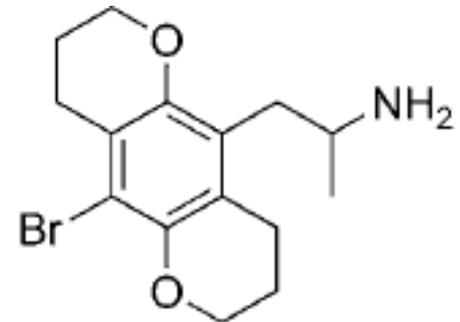
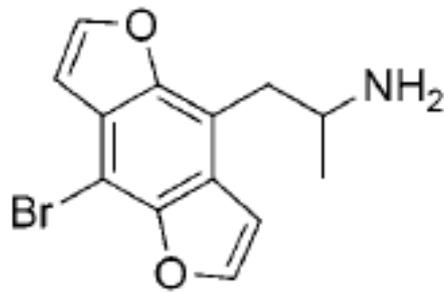
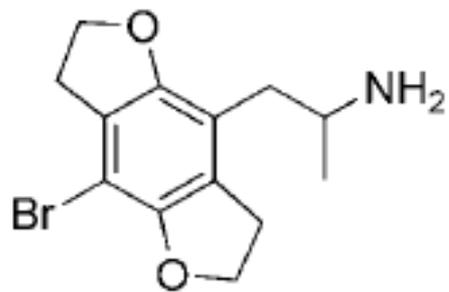
NBOMe

- Sympathomimetic toxidrome
 - *Tachycardia* >> hypertension
- Hallucinations / agitation
- Seizures
- Kidney Failure
- Severe Agitation



Bromodragonfly





- High affinity for serotonin receptors
- Potent hallucinogens
- Potent vasoconstrictors
- As hallucinogenic as LSD, can last for days

BromoDragonFly

- Sympathomimetic toxidrome
- Severe vasoconstriction
- 5 deaths in Sweden



Bromo-Dragonfly Death and Hospitalization in Sweden

by Erowid, Suave, and Abrad

v1.0 Aug 16, 2008

The Future ??

- **Synthetic Opiates**
- **Benzodiazepine-Analogs**
 - **Etizolam**
 - **Not Controlled in USA**
 - **Order it on line**

Dangers of Synthetic Drugs

- **Excited Delirium, Kidney Failure, Death**
- **More Addictive and Deadly ever month**
“Guinea Pig” drugs
- **Both Short and Long-term Psychosis**
- **Linked to Violent Behavior**
- **Information Dissemination:**
“It’s Poison and it can kill you”