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Psychiatry and Addictions Case Conference

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DRUGS OF CONCERN

A LOOK AT PSYCHOACTIVE SUBSTANCES ON THE DEA'S RADAR

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APRIL 19TH, 2018

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SPEAKER DISCLOSURES

✓ Any conflicts of interest?

GENERAL DISCLOSURES

The University of Washington School of Medicine also gratefully acknowledges receipt of educational grant support for this activity from the Washington State Legislature through the Safety-Net Hospital Assessment, working to expand access to psychiatric services throughout Washington State.

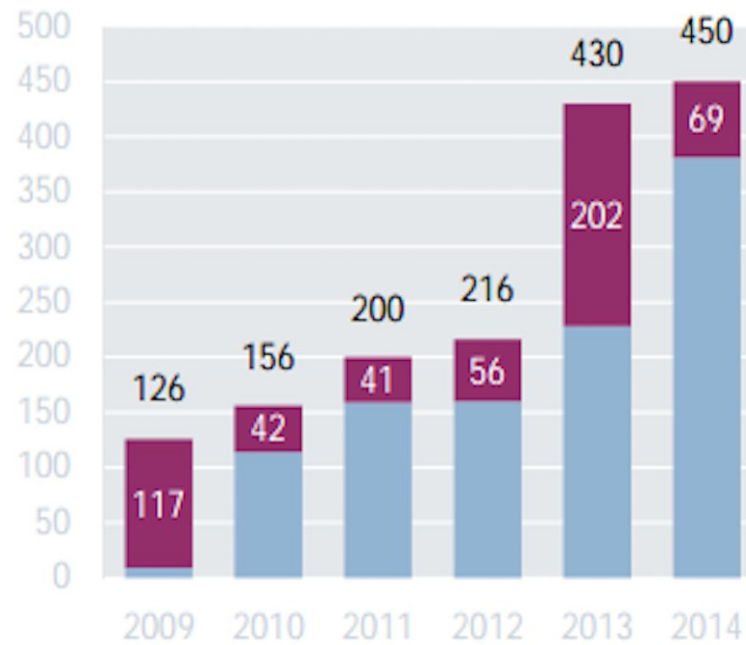
LEARNING OBJECTIVES

- Provide a brief overview of drug scheduling, and drug laws.
- Gain better understanding of important, but lesser known about Psychoactive Substances.
- Knowledge should be gained in history, mechanism of action, and important aspects of use of presented substances.

Global emergence of new psychoactive substances up to December 2015:



FIG. 75. Number of new psychoactive substances reported, 2009-2014



- Number of new psychoactive substances reported in current year for the first time
- Number of new psychoactive substances reported in current year but not for the first time

Source: UNODC, early warning advisory on NPS, 2009-2014.

Note: This graph represents only the number of different NPS reported during the respective reporting year. Not all NPS reported in one year were necessarily reported in the following year(s).

DRUG SCHEDULING

- Schedule I – No current medical use and high potential for abuse.
- Schedule II – High potential for abuse, with use potentially leading to severe psychological or physical dependence.
- Schedule III – Moderate to low potential for physical and psychological dependence. Abuse potential < I & II, but >IV.
- Schedule IV – Low potential for abuse and low risk of dependence.
- Schedule V – Lower potential for abuse than IV and drugs with limited quantities of certain narcotics.²

CASE REPORT

- 30 yo M, purchased *a substance* through a website on the Internet, where it was sold in packets labeled according to four ‘strengths’ – 0, 5, 10 and 20.
- He smoked a small amount of the ‘10’ strength herb in a joint, and experienced vivid visual and auditory hallucinations that lasted for 12–14 mins. The hallucinations included extracampine hallucinations of a female presence in the room, pareidolic experiences, with inanimate objects such as furniture coming alive, talking to him and walking about the room. He also had visual hallucinations of ghostly figures talking to him and experienced extreme fear. His consciousness was intact throughout the experience.
- The patient discarded all the packets after trying lower strength with similar.
- There were no reported after-effects, and in the longer term, the patient did not experience any perceptual disturbances after his exposure. Although the patient had a history of drug abuse, he had not experienced similar psychopathological symptoms with other drugs. ³

SALVIA DIVINORUM

- AKA “Shepherdess's Herb,” “Diviner's sage,” “Seer's Sage,” “Maria Pastora,” “Magic Mint,” and “Sally-D”.
- Commonly known as “Salvia”.
- Used over 1000 years ago in Mexico by the Mazateca people for ceremonial rituals.³
- Part of the mint family.⁴
- Originally used in the form of tea. Modern forms of use include smoking the dried leaves, and chewing them raw as a “quid”.

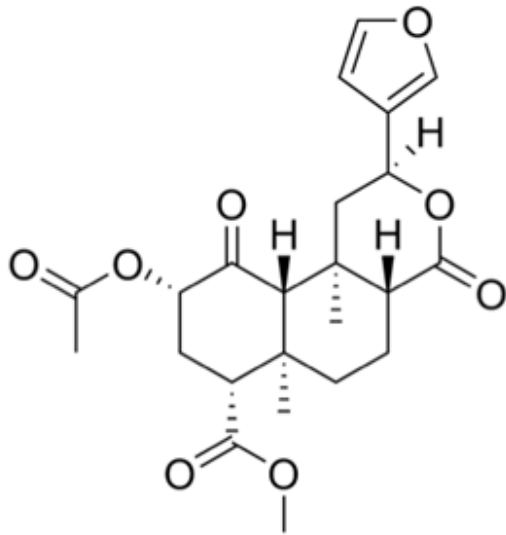


TRENDS IN USE

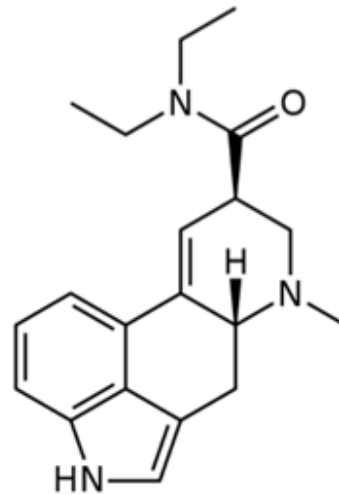
- Literature on current Salvia prevalence is scarce
- MTF study indicates prevalence among 12th graders is 1.9%, College Students is 0.4%, and 0.6% in young adults in the United States. ⁵

PHARMACOLOGY

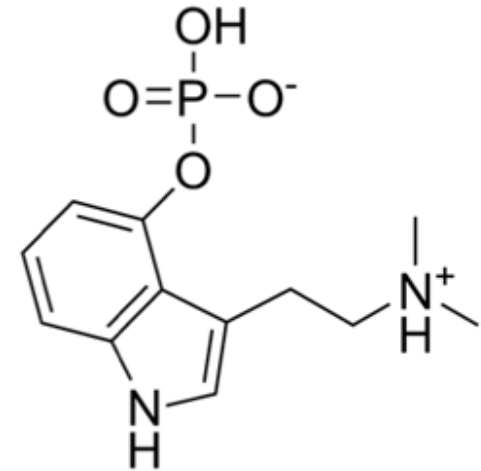
- Considered a hallucinogen, but differs from others as it has no effect on 5-HT_{2A}R receptor and does not contain nitrogen.
- Psychoactive compound that has been identified is Salvinorin A.
- Selectively acts as an agonist on kappa opioid receptors.
- Neuropsychological symptoms arise within 30 seconds of inhalation and 5–10 min after buccal absorption. The duration of effect is approximately 20–30 min for inhalation versus 2 hours after buccal absorption.
- Rapid uptake across BBB attributed to low molecular weight and high lipophilicity.
- Salvinorin A is active in doses as low as 500 µg, with a potency similar to LSD.



Salvinorin A



LSD



Psilocybin

- Metabolized by the liver to inactive metabolite of Salvinorin B.
- Exact metabolism still unknown at this time.⁶

INTOXICATION

- Synthesia
- Hallucinations
- Dissociative experiences
- Restlessness
- Uncontrollable laughter
- Slurred Speech
- Ataxia ⁷

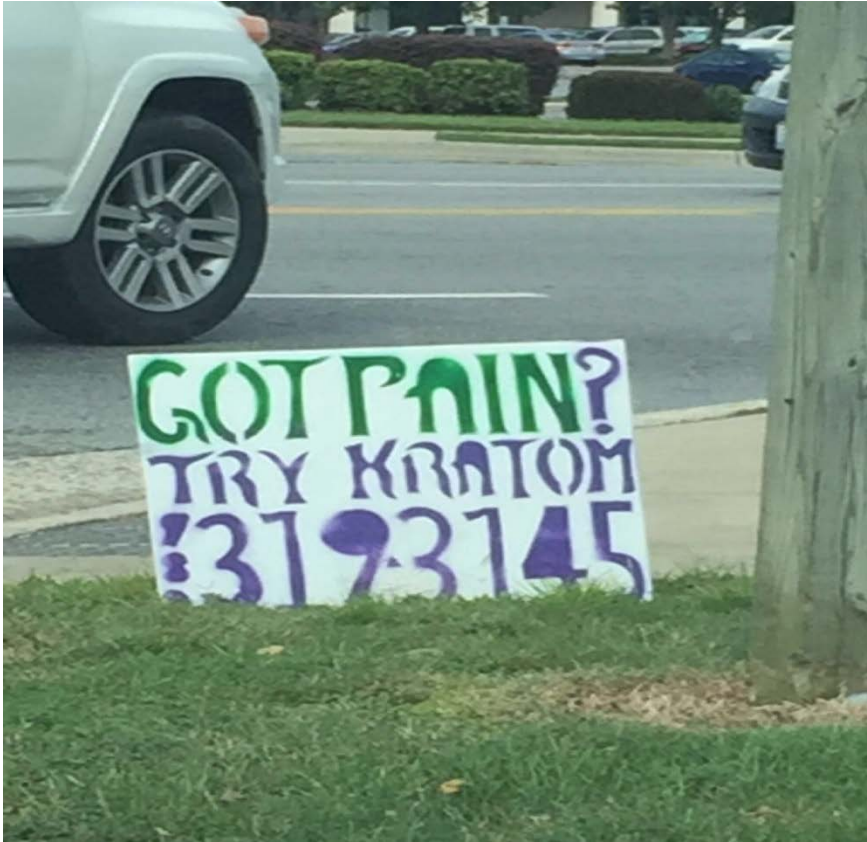
CASE REPORT

- A 58-year-old Caucasian man with schizoaffective disorder was admitted to the hospital for jaundice and liver injury suspected to be resulting from use of a substance.
- He had ingested a powder (1 tablespoon daily) for 3 months to relieve anxiety and aid in relaxation. At that point, his psychiatrist noticed jaundice and ordered laboratory tests, which showed liver abnormalities that gradually improved after discontinuation of the substance.
- During this period, his psychotropic medications were initially held for 1 week and then reintroduced without recurrence of the liver test abnormalities.
- The product used was described as a herbal powder as “100% effective and 100% natural.” The patient obtained bulk packages of the product from a novelty store.⁹

MITRAGYNA SPECIOSA

- AKA Thang, Biak-Biak, Maeng Da, and Mambog.
- Commonly known as, “Kratom”.
- Originates from countries of southeast Asia such as Thailand, Mynarma (Burma), and Malayasia. Also found in some parts of Africa.
- From a tropical tree, and is a member of the coffee family. Named Mitragyna, because it was felt it looked similar to a “Bishop’s Mitre”
- Used in these areas for several thousand years.
- Dried leaves, and stems used for consumption.
- Chewed or prepared as a powder traditionally. Modern forms of use include drinking as a tea, or in the form of a capsule.





TRENDS IN USE

- Prevalence outside of Thailand is scarce.
- Poison Control Centers have reported calls pertaining to Kratom since 2008.

PHARMACOLOGY

- Analysis of the leaves has shown that there are 25 alkaloids present.
- The two main alkaloids are:
 - 1) Mitragynine**
 - 2) 7-Hydroxymitragynine (7-HMG)**

- Complex mechanism of action as they can have an opioid like effect or stimulant effect.
- Strains, and dosage are determining factors in effect.
- Buprenorphine and 7-HMG are selective, and full agonists of the Mu-opioid receptors.
- Buprenorphine acts on supraspinal mu and delta opioid receptors
- There is also antagonism of 5HT_{2A} receptors and stimulation of postsynaptic alpha-2 adrenergic receptors which contribute to stimulant activity.
- Full effects occur in 30-60 minutes after ingestion. Half life of Buprenorphine is 3.5 hours, and 7-HMG is 2.5 hours.
- Believed to be metabolized by the liver.
- Excreted through the urine.

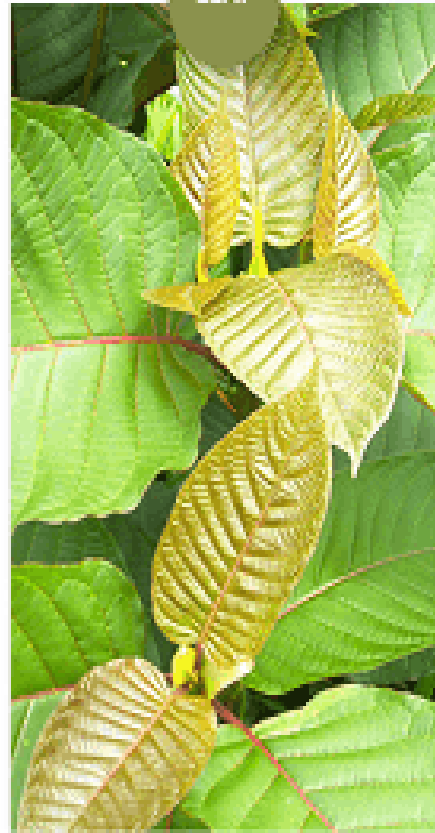
GREEN
LEAF



RED
LEAF



WHITE
LEAF



INTOXICATION

- Stimulant Effects (1 – 5 g):
 - Increased alertness/energy
 - Talkativeness
 - Increased sociability
 - coordination
 - Euphoria
 - Constipation
 - Dizziness
 - Hypotension
 - Diaphoresis
 - Tachycardia

- Opioid effects (5 – 15 g):
 - Loss of muscle

WITHDRAWAL/SIDE EFFECTS

- Prolonged use can lead to nausea, weight loss, fatigue, constipation, insomnia, dry mouth, frequent urination, and hyperpigmentation of the cheeks.
- Withdrawal similar to that of other opioids.
- Seizures, addiction, psychosis, and intrahepatic cholestasis have been reported
- **Drug – drug interactions must be considered.**
10,11,12

CASE REPORT

- A 20-year-old female college student, with no history of psychiatric disorder, was brought to the emergency department by police after being found outside her apartment displaying “bizarre behavior.” Police reported that the patient was discovered screaming in public, agitated with rapid speech, delusional disorganization, and grandiosity. She reported auditory hallucinations consisting of communications with God. Upon presentation to the emergency department, she was combative. A consultant psychiatrist found her to be guarded and irritable with pronounced lability of mood. She displayed pressured speech, panic anxiety with paranoid, and goal-directed content. She insisted that she return home and gather her belongings. She expressed fears that her roommates were jealous of her and wanted to rob her. She denied use of other substances except casual use of marijuana. Laboratory studies were unrevealing. MRI of the head was unremarkable.
- She was admitted to the behavioral health unit and treated with an atypical antipsychotic and benzodiazepine. Upon admission a cognitive screen (St Louis University Mental Status) was consistent with mild cognitive impairment). On the second hospital day, paranoid ideas persisted and she continued to display emotional lability. By the third hospital day, she was dramatically improved. She was calm, free of agitation, paranoid ideation, or hallucinations. She acknowledged first-time use of an over the counter medication. She also reported that after ingestion she experienced increased energy and decreased need for sleep.¹⁶

DEXTROMETHORPHAN

- AKA “Red Devils”, “TripleC’s, and “Skittles”.
- Large amounts used for intention of obtaining a high is known as “Robotripping”.
- Available over the counter for relief of cold and cough.
- Usually given in combination with pseudoephedrine and/or antihistamines
- Found in the form of syrups, pills, or inhalers.
- Cheap cost is appealing.
- Most abusers use doses exceeding recommended amounts.

PHARMACY MEDICINE
KEEP OUT OF REACH OF CHILDREN

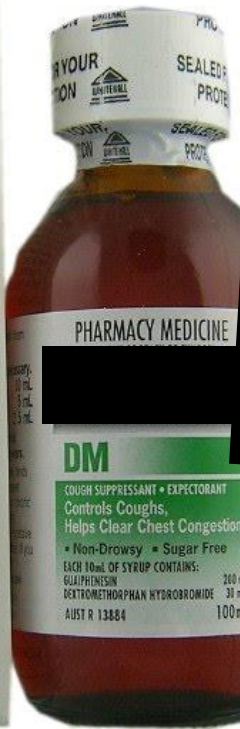
DM
COUGH SUPPRESSANT • EXPECTORANT

Cough Control & Chest Congestion

Controls Coughs for up to 6-8 Hours. Loosens and Helps Clear Chest Congestion.

- Non-Drowsy
- Sugar Free
- For The Family

EACH 10mL OF SYRUP CONTAINS:
GUAIPHENESIN 200 mg
DEXTROMETHORPHAN HYDROBROMIDE 30 mg
AUST R 13884 **100mL**



MAXIMUM STRENGTH NDC 63824-072-35

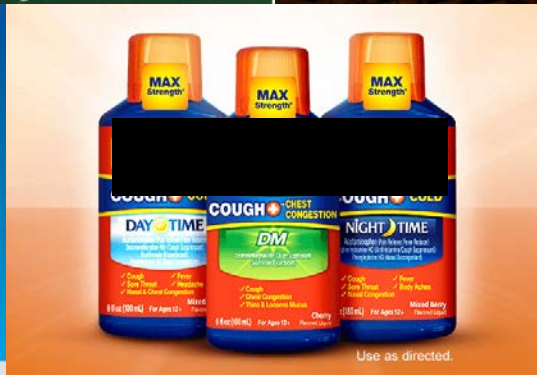
1200 mg guaifenesin & 60 mg dextromethorphan HBr extended-release bi-layer tablets

EXPECTORANT & COUGH SUPPRESSANT

12 HOUR

NEW LOOK - SAME RELIEF

- ✓ Thins And Loosens Mucus
- ✓ Controls Cough

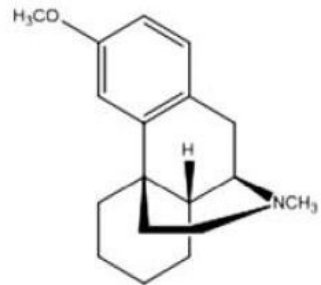


TRENDS IN USE

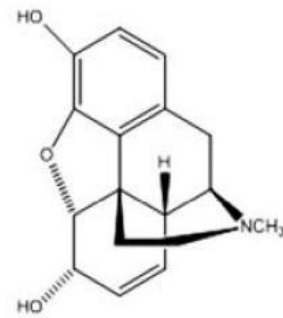
- Between 2002 – 2005 17% increase in nonprescription drug abuse.
- Most prevalent between the ages of 18 – 25 years old.
- The most commonly abused include Nyquil (30.5%), Coricidin (18.1%), and Robitussin (17.8%).

PHARMACOLOGY

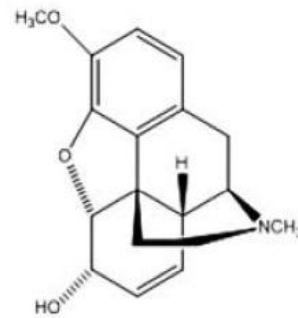
- Psychoactive effects due to activity of metabolite **Dextrorphan**.
- Both metabolite and DXM have activity at the NMDA receptor as antagonists.
- SSRI activity.
- Extensive first pass metabolism via CYP2D6. Metabolite further broken down by CYP3A4 and A5.
- Peak concentrations within 2.5 hours.
- UDS can cause false positive for PCP, and possibly opioids.



DXM



Morphine



Codeine

INTOXICATION

- Progressive plateaus seen based on dosage, 4 in total:
 - 1) 1.5 – 2.5 mg/kg - Stimulating effects with MDMA-like perceptual alterations.
 - 2) 2.5 – 7.5 mg/kg - Effects similar to alcohol and marijuana.
 - 3) 7.5 -15 mg/kg – Ketamine like experience with dissociation.
 - 4) > 15 mg/kg - Out-of-the-body, dream like states with visual hallucinations.

WITHDRAWAL/SIDE EFFECTS

- Withdrawal:
 - Anxiety
 - Dysphoria
 - Insomnia
 - Malaise
 - Suicidal Ideation
 - Cravings
- Side effects:
 - Excitatory delirium
 - Psychosis
 - Mania ^{17, 18,19}

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