

A collage of various addictive substances. In the foreground, there are two white, oval-shaped pills. Behind them, a cigarette with a white filter and a brown end lies diagonally. To the right, a syringe with a blue plunger and a needle is visible. In the background, a glass filled with a golden-brown liquid, possibly alcohol, is partially visible. The entire scene is set against a light, neutral background.

# Addictive substances – Basics



**Dr. Ravindra Rao**

Assistant Professor

National Drug Dependence Treatment Centre  
All India Institute of Medical Sciences  
New Delhi



# What are addictive substances?

According to **WORLD HEALTH ORGANIZATION**, *any substance which, when taken, has ability to **change** an individual's*

*Consciousness*



*Perception*



*Mood*



*Thinking Process*



*Behaviour or Motor Function*






- Also called as “**psychoactive substances**”, “**psychoactive drugs**”
- Layman term: “**DRUGS**”



# Examples of addictive substances affecting brain functions

**For instance**

Consciousness	Perception	Mood
<p>Alcohol can make a person drowsy</p> 	<p>Cannabis can make a person see color more vividly</p> 	<p>Cannabis can make a person become more happy or more sad</p> 



# Quiz



Addictive substances produce their addictive potential by acting on:

- ☐ brain
- ☐ Lung
- ☐ Heart
- ☐ Kidney

Submit

Click the  **Quiz** button to edit this quiz

# Why are certain substances addictive?

**Usually**

Intake of any substance – orally, inhalation, injecting



Enters the bloodstream



Acts on a specific body part, such as heart, lung, stomach, etc.





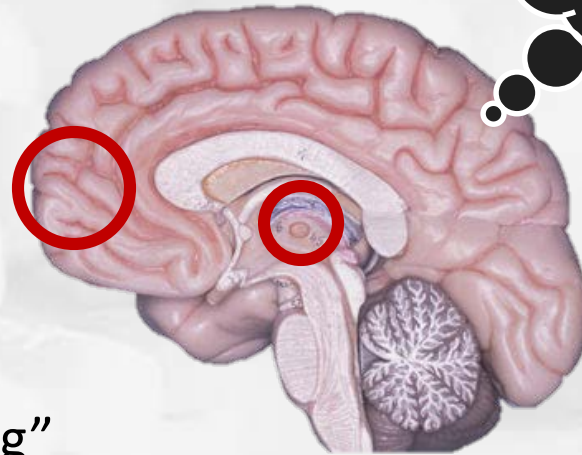
# Addictive Substances act on brain

**But:**

All substances acting on the brain are *not* addictive

Addictive substances primarily act on a particular area/group of neurons in the brain,

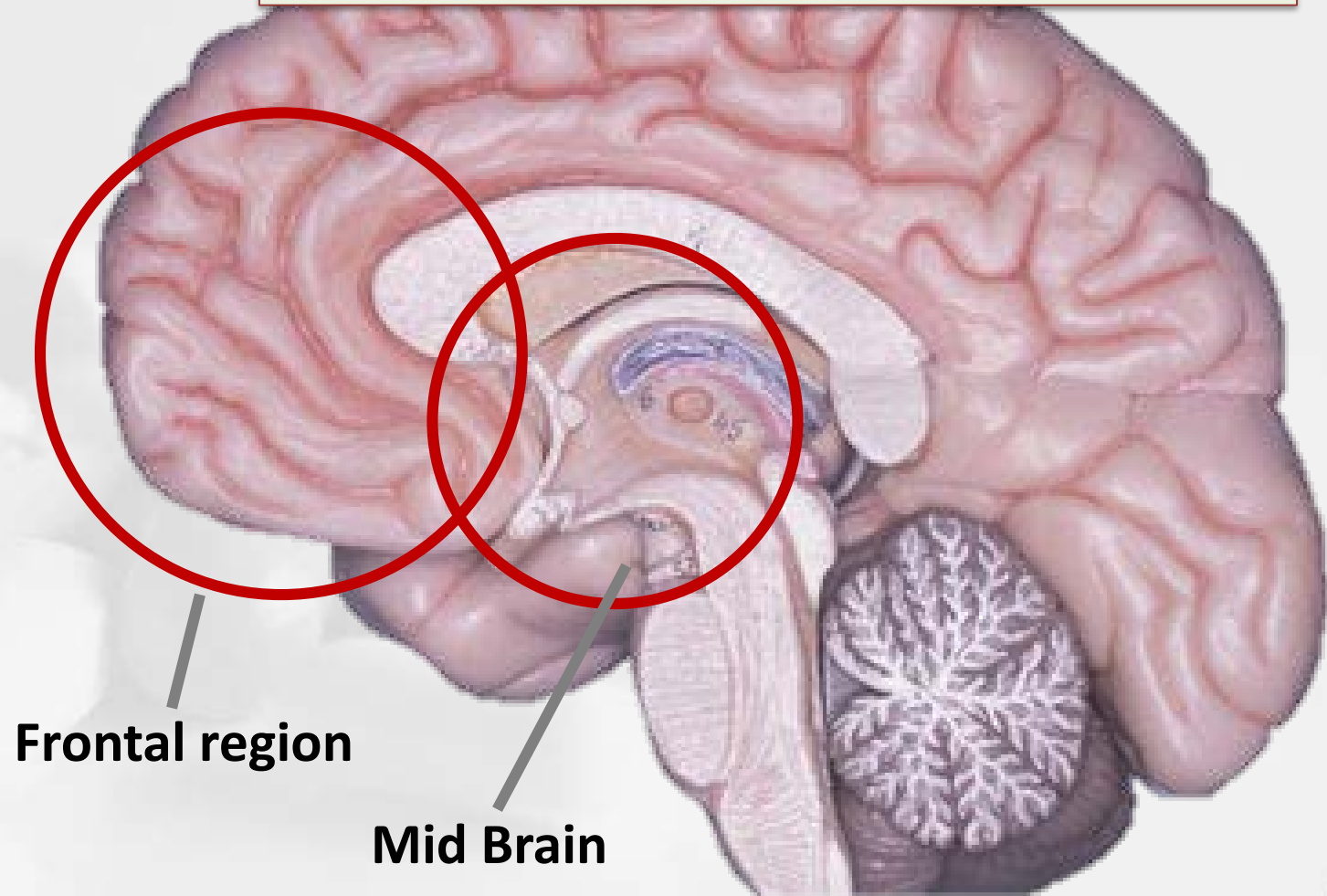
Leading the individual to repeatedly administer the addictive / psychoactive substance → “drug seeking” behaviour



I want to take that drug again!

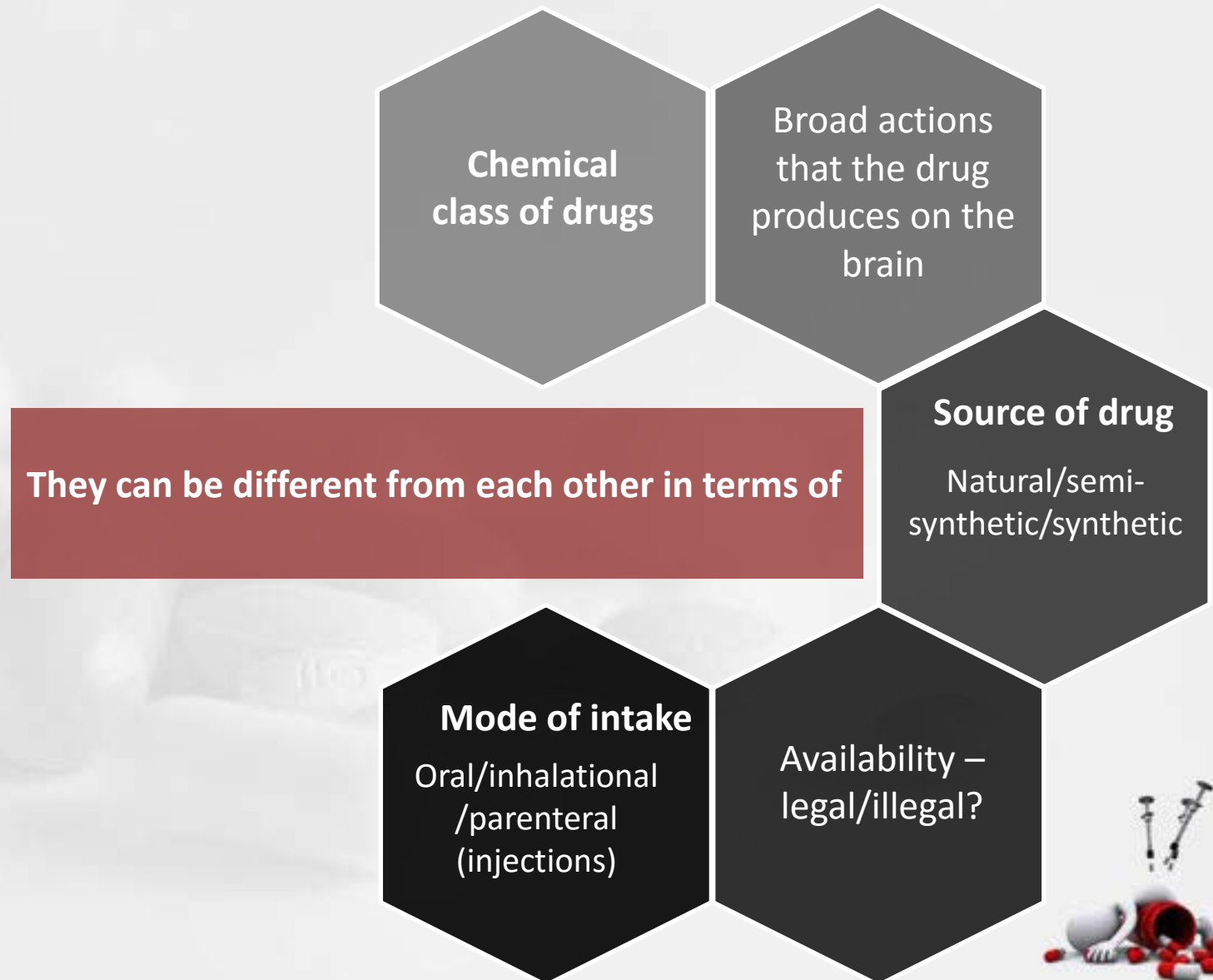


Addictive substances primarily act on a particular area/group of neurons in the brain.

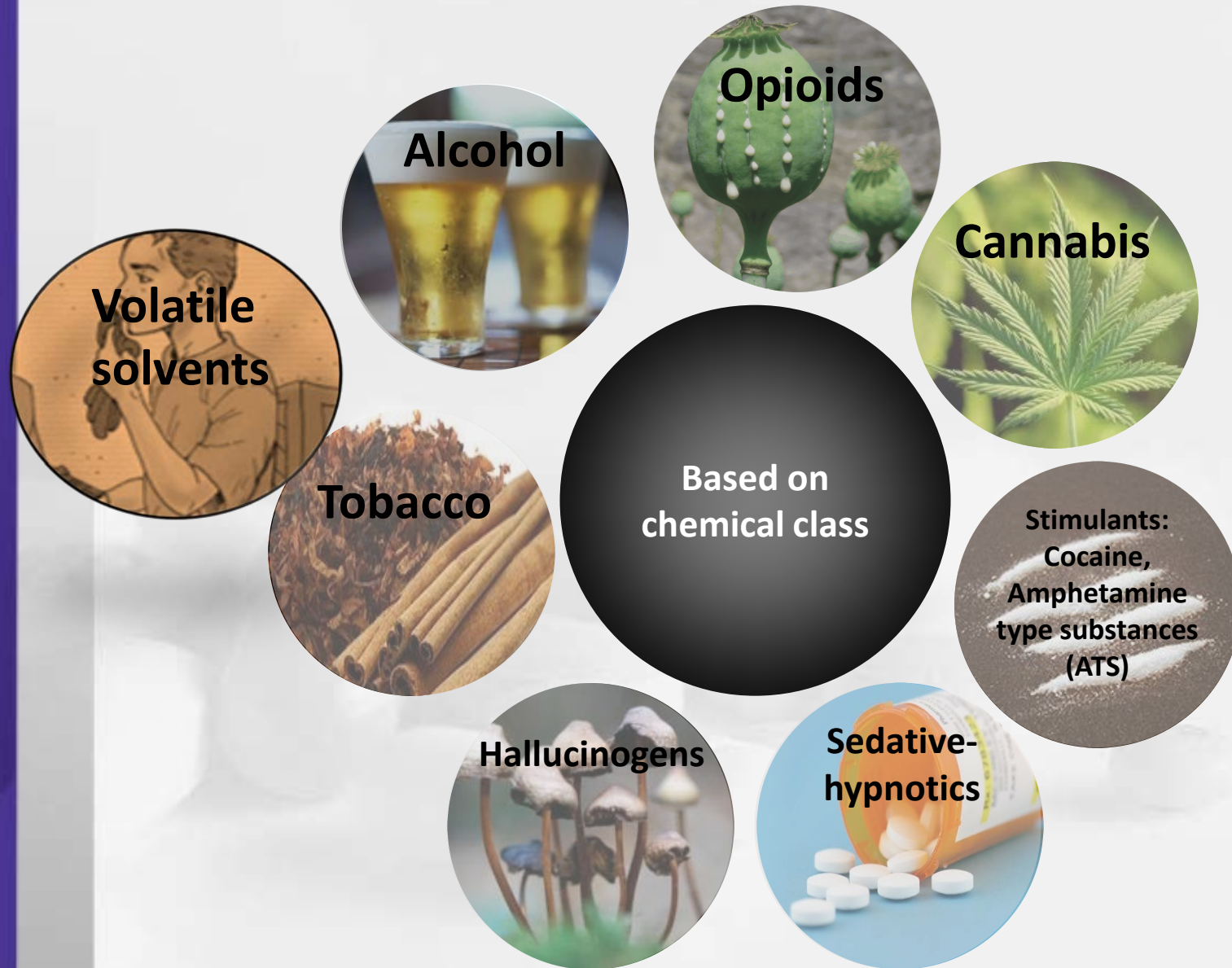




# How are addictive substances different from each other?



# Type of addictive substances



# Type of addictive substances:

## Based on actions produced:

### Depressants

- Alcohol
- Cannabis
- Opioids
- Sedative/hypnotics



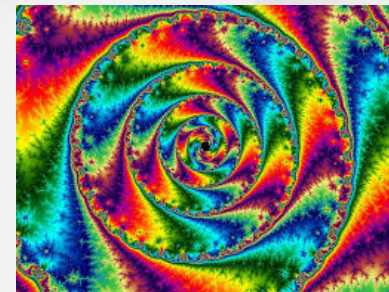
### Stimulants

- Cocaine
- Amphetamine and ATS
- Tobacco, Caffeine



### Hallucinogens

- LSD



# Alcohol



# Various preparations of alcohol

Various alcohol preparations :



➤ **Source of production**

- Beer: Cereals such as barley, wheat
- Wine: various fruits such as grape, apricots
- Spirits: Molasses from sugarcane

➤ **Percentage of ethyl alcohol in the beverage**

- Beer: 4 – 8%
- Wine: 12 – 15%
- Country made liquor: 20 – 30%
- Spirits: 40 – 42%

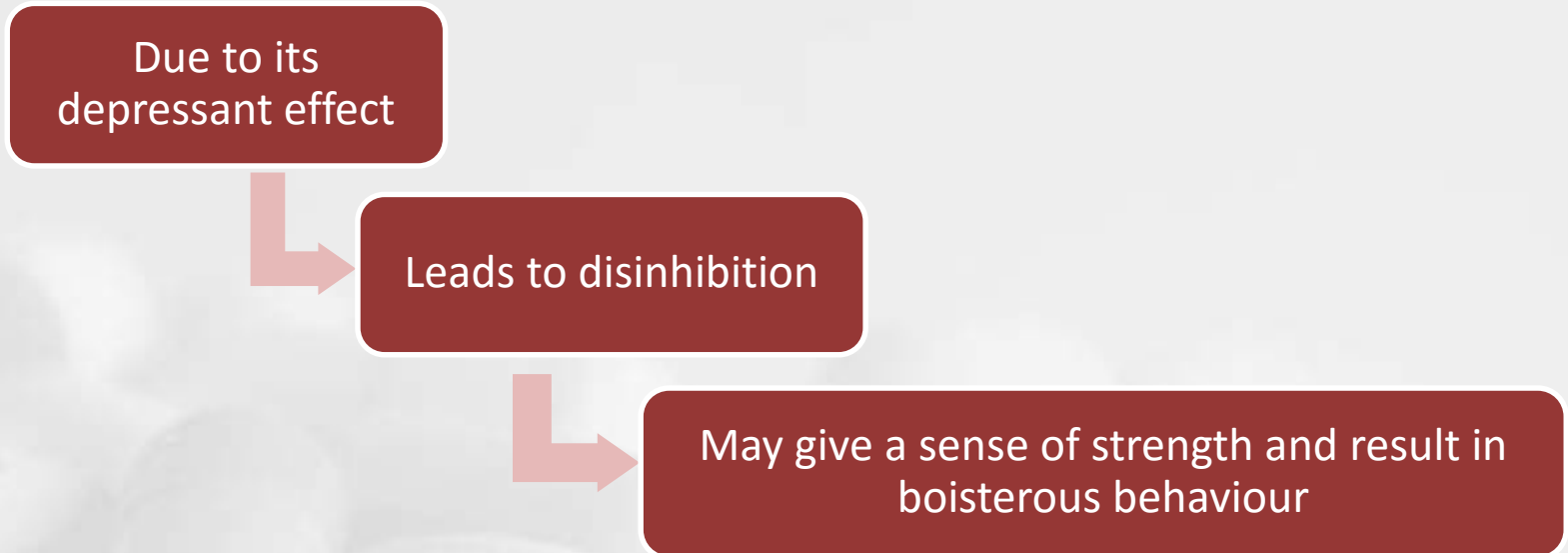
➤ **Flavouring agents added**





# Effects of alcohol

- Alcohol is a brain depressant.
  - It heightens the mood prior to intake, be it sadness or happiness.




- Impairs judgement and performance



# Quiz

Question 1 of 1 ▾ | Point Value: 10 | Total Points: 0 out of 10

 What is the concentration of alcohol in Whisky and other related spirits

☐ 12-20%

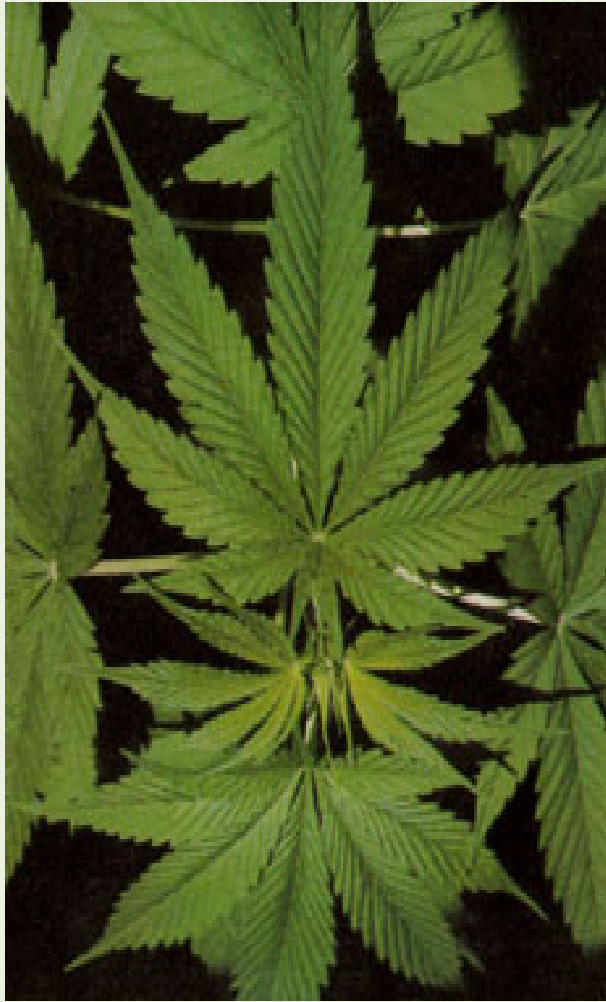
☐ 40-42%

☐ 4-8%



Click the  **Quiz** button to edit this quiz

# Cannabis



# Bhang , Gaanja and Charas

- Derived from the plant **cannabis sativa**,
  - Bhang- paste of leaves of the plant or dried leaves
  - Ganja – dried flowering stem of the plant
  - Charas or hashish is extracted from the resin of the plant.
- Active compounds are called Cannabinoids
  - Most potent: Tetrahydrocannabinol (THC)



# Bhang: the legal preparation in INDIA

- Milk based drink called **Thandai**
  - commonly used in North India on religious occasions (Holi & Shivratri)
- Bhang mixed With flour to make 'pakodas' or 'bhajji'.
- **Bhang Sweets**
- **Manoka**: Preparation consisting of bhang paste
  - sold as Ayurvedic medicinal preparation in North India.



# Other illegal preparations

The following forms are illegal in India according to NDPS act:

Forms (extremely variable)	THC content	Route of intake
Ganja	4 – 6 % THC	Smoked
Hashish /Charas	10 – 20 % THC	Smoked
Hash oil	15-30% THC (may be more)	Smoked





# Effects of cannabis products

- A dreamy state with an increased tendency to fantasize
  - Euphoria and well being followed by drowsiness.
- Perceptual and sensory distortions.
  - Can prolong reaction time and impair coordination
  - Sounds and colours may become more intense



# Effects of cannabis products

- There may be driven activity
  - Subject knows that one's activities are meaningless, yet is unable to control them
- Restlessness, fear and even panic may spoil the experience (“bad trip”).




# Quiz

Question 1 of 1 ▾

Point Value: 10 | Total Points: 0 out of 10

Click on the leaves of Cannabis in the following image



Clear

Submit

Click the  **Quiz** button to edit this quiz

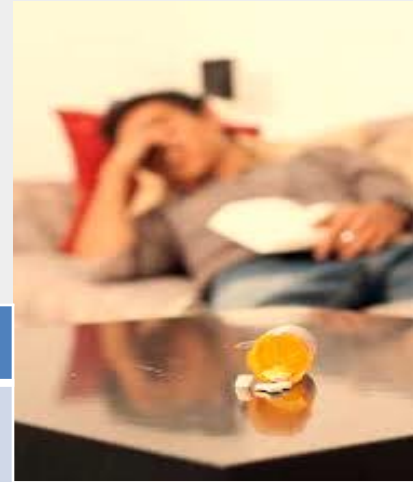
# Sedative and hypnotic drugs



# What are these?

- Pharmaceutical preparations used for various medical conditions

Class/type	Examples	Medical uses
<b>Benzodiazepines</b>	<ul style="list-style-type: none"><li>• Diazepam,</li><li>• Nitrazepam,</li><li>• Clonazepam ,</li><li>• Alprazolam</li></ul>	<ul style="list-style-type: none"><li>• Sleep</li><li>• Anxiety disorders</li><li>• Other mental illnesses</li></ul>
<b>Barbiturates</b>	<ul style="list-style-type: none"><li>• Phenobarbitone</li><li>• Midazolam</li></ul>	<ul style="list-style-type: none"><li>• Epilepsy</li><li>• Anaesthesia</li></ul>
<b>Anti-histamines</b>	<ul style="list-style-type: none"><li>• Chlorphenamine</li><li>• Phenaramine</li><li>• Promethazine</li></ul>	Allergic conditions



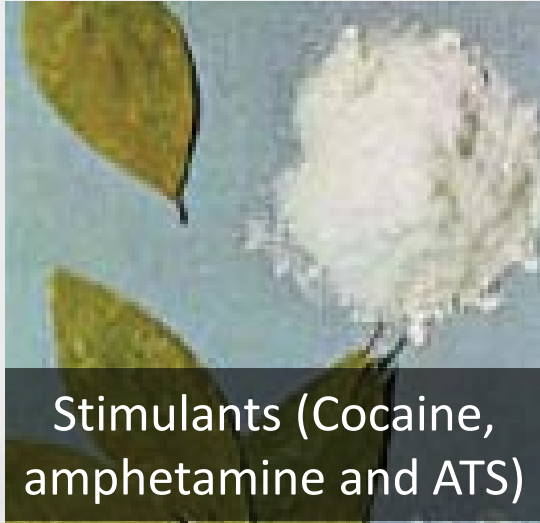
# Effects of sedatives/hypnotics

- Brain depressants
  - Produces sedation and relieves anxiety
  - Euphoria in some users
  - High dose can lead to respiratory depression
  - Long-term use can lead to dependence/addiction
- Commonly available in pharmacy shops
- Used
  - Alone
  - In combination with opioids for injecting





# Other substances



# Stimulants

## Cocaine

- Available in various formulations
- Usually snorted or injected



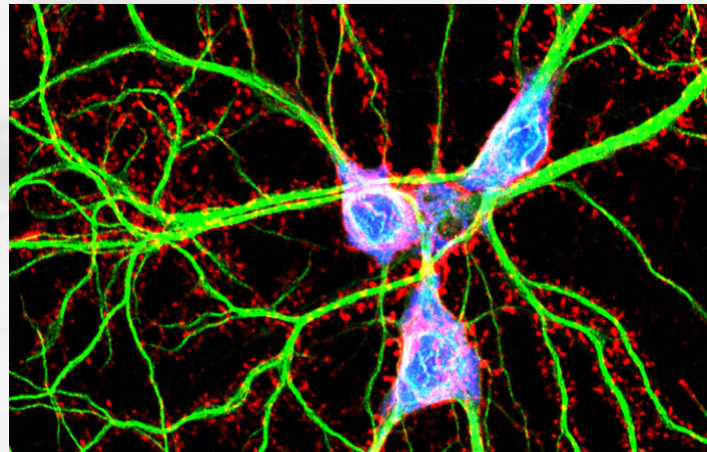
## Amphetamine type stimulants (ATS)

- Pharmaceutical preparations
- Methamphetamine most common ATS
- Consumed orally or injected



# Stimulants: Psychological effects

- Stimulates brain and other body functions
- Immediately after smoking or injecting - extremely pleasurable 'rush' or 'flash'.
  - Insomnia
  - Enhanced mood and body movement, euphoria
  - Increased respiration
  - Increased heart rate, blood pressure
  - Reduced appetite



# Hallucinogens

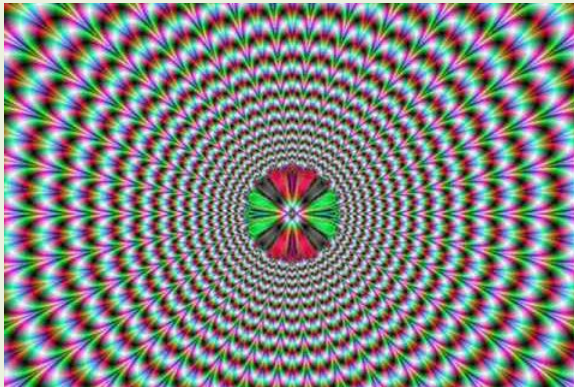
- Substances that produce distortions of perception
  - User may start seeing or hearing things which others cannot see or hear
- Used by younger age group as recreational agents on certain occasions in rave parties (not usually substances of daily regular use)



# CNS Hallucinogens

## Produce distortions in sensations

- Hallucinations: visual, auditory, etc.
- Perception of time, world, self
- Synaesthesia: melding of two sensory modalities



## Examples

- LSD
- Phencyclidine, Ketamine
- Magic mushrooms
- Atropinic compounds: atropine (dhatura, belladonna)



# Volatile substances

*Commonly known as inhalants*



- Generally petroleum products which are used for variety of domestic and industrial purposes
- Examples: petrol, glue, ink removers, nail polish removers, kerosene
- Most common volatile substances used in India are ink-removing fluids and glues.





# Volatile substances

- Most commonly seen amongst adolescents who have not yet experienced other forms of substances
- Mode of use: sniffing, huffing, bagging
- More dangerous than other substances:  
Inhalants NOT DESIGNED FOR HUMAN CONSUMPTION



# Acute effects of volatile substances

- Brain depressants with alcohol-like effects
- Initial rush and euphoria
- Deep breathing may cause loss of touch with surrounding, loss of self-control, violence, nausea, unconsciousness, giddiness, loss of appetite
- Higher doses may cause hallucinations
- Can also cause: Loss of motor skills, Palpitations, Seizures, Abdominal pain



# Chronic long term effects....

➤ Their use over a prolonged period can cause:

- Neurological damage
- Peripheral neuropathy
- Cognitive deterioration
- Possible violence and aggression
- Damage to other organs like liver, kidney etc.







**Tobacco**



# Tobacco and related products

*Most common substance  
used by mankind*



**Tobacco can be used broadly by two ways**

1

- Smoking (bidi/ cigarette / cigar / hukkah)

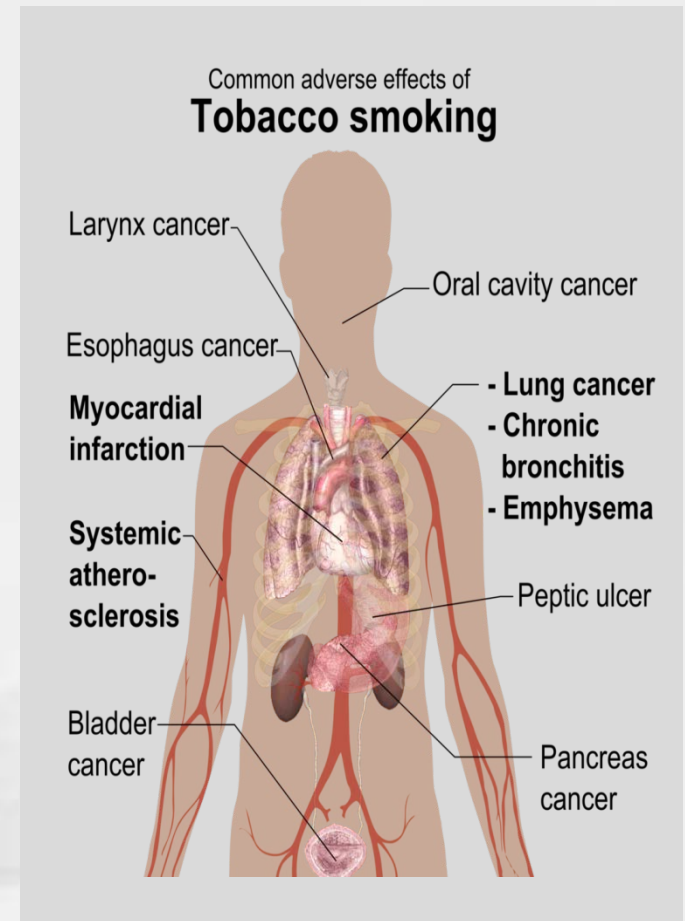
2

- Smokeless (Tobacco / Khaini / gutkha )



# The long-standing view: Tobacco Use is a Health Risk Factor

- Smoking causes more than 700,000 deaths/year in India
  - Cardiovascular disease
  - Cancer of multiple organ sites
  - Pulmonary Disorders
- Fetal/infant/childhood morbidity & mortality through second-hand smoke



# The evolved view: Tobacco Use is a More than a Risk Factor

Tobacco use, in particular, chronic use of tobacco, is *a disorder in itself*.

- Nicotine – the active ingredient and one of the most addictive compound

*Nicotine dependence  
(with clinical features like any other  
dependence syndrome)*





- Addictive substances affect many regions and functions of brain
- Addictive substances are of different types
- Addictive substances can be classified as depressants, stimulants and hallucinogens on the basis of their broad actions
- The effect varies from one addictive substance to another

