

DRUGS

→ all externally administered chemicals which may effect any chemical process inside the body

- 3 types :
1. Medicinal Drugs
 2. Abusive Drugs
 3. Recreational Drugs

MEDICINAL DRUGS

→ are used to treat a diseased or disordered condition

→ further categorized :

- i. Antibiotics

ii. Anesthetics

iii. Analgesics (Pain killers)

iii. Analgesics

→ are pain killers that reduce the effect of pain in the body without causing numbness or affecting consciousness

→ do not treat cause of the pain

→ e.g/ Aspirin, Dufirin

→ can be taken in the form of tablets, injections or pain killers syrups

→ block receptors from sending pain signals

→ may cause irritation to stomach walls

iii. Anesthetics

→ inhibit the feeling of pain but do not treat its cause

→ ①. Local Anesthetics

* lotion, ointment or sprays

* area at which medicine is applied becomes insensitive

* used in dental procedures / eye surgeries

* local insensitivity

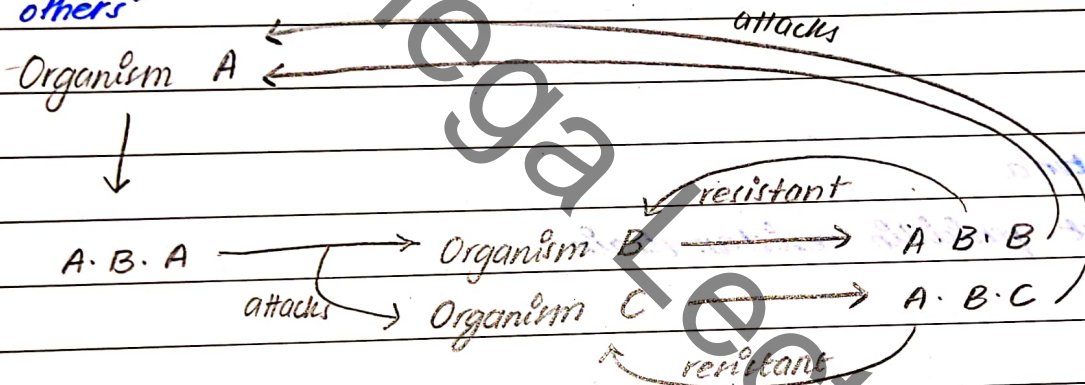


→ ②. General Anesthetics

- * used to make the whole body insensitive
- * surgical procedures e.g/ open heart surgeries

i. Antibiotics

- chemicals produced by bacteria & fungi for their own defence against other microorganisms
- a substance extracted from micro-organisms to control bacterial infections
- organisms are resistant to their own antibiotics but can be destroyed by others'



- effect of antibiotics :
 - inhibit cell wall formation of other micro-organisms
 - inhibit protein synthesis of other microorganisms
 - ↳ inhibits growth
 - interfere with cell division

→ overdose of antibiotics can have side effects

→ if they are taken less than recommended, bacteria will develop a resistance against them

→ they do not work against viruses

→ are specific against bacteria & fungi / specie-specific

→ have 4 types of antibiotics:

01. Penicillin

- * produced by a fungus called penicillium
- * narrow spectrum antibiotic (small range / type of micro-organism)

02. Cephalosporins

- * produced by fungus cephalosporium
- * useful against bacteria resistant to penicillin

03. Tetracyclins

- * produced by a bacteria
- * broad spectrum antibiotic

04. Erythromycins

- * produced by bacteria
- * effective against penicillin resistant strain

ABUSIVE DRUGS

→ a drug or chemical becomes abusive b/c of number of reasons

(i). Addiction

- * → dependance on a drug or chemical
- * → the person does not feel comfortable without it or the response produced by it

(ii). Tolerance

- * → body stops responding to the initial dose
- * → person had to increase intake after every short span of time

ciii). Withdrawal symptoms

- * → strong / aggressive behaviour, vomiting, cramps, nausea, headaches
- * → ~~stating~~ all conditions faced by a person after stopping the use of a drug
- * → resulting in reuse of drug to avoid withdrawal symptoms

→ 4 types:

01. Stimulants

- prevent fatigue, combat depression / more alert and confident feeling
- speed up the CNS
- increased heart rate, body temperature, blood pressure
- reduce appetite, dilated pupils, talkativeness and sleep disturbance
- e.g. / cocaine

02. Depressants

- also known as downers
- treats insomnia and epilepsy
- slows down the CNS
- sense of relaxation & calmness
- slows down ~~speed~~ heart rate and breathing and causes unconsciousness and slurred speech

03. Hallucinogenics

- ~~other~~ loss of contact from reality, e.g. / Cannabis, Marijuana
- observance of distorted images / dramatically alters perception
- sweating, dilation of pupils, talking / laughing, paranoia

04. Opiates

- relief from pain and induce sleep by suppressing the part of brain that responds to sense of pain

→ e.g. Opium, Morphine, Heroin

Heroin

- mimicks the actions of a body's natural pain killers and binds on the receptor for pain giving an initial pleasure feeling which can be called euphoria
- ↳ after 3-6 minutes of intake
- powerful depressant
- reduces hunger, reliefs tension and develops sleepy condition
- an expensive drug and the user develops tolerance against it
- the addict ignores family & job — limited sources of income
- ↳ can be involved in stealing, may become violent & commit murders. etc
- use of hypodermic needles for intake can be a cause of transmission of Hepatitis C and AIDS in human population
- withdrawal symptoms:
 - * watery eyes
 - * stomach upset
 - * muscular pain
 - * vomiting / diarrhea
 - * convulsions / hallucinations

Alcohol :

- people start its use to show off, influenced from advertisers, peer pressure, easily available, to overcome social inhibition
- depressant drug that affects almost every part of the body
- slows down impulses in peripheral nervous system, increasing reaction time
- slurred speech, blurred vision
- affects medulla and may cause death
- it causes cirrhosis (shrinking of liver)
- ↳ % of activated detoxification of alcohol in blood
- poor muscular ~~coord~~ co-ordination
- deterioration of judgement
 - ↳ misjudging others & themselves
 - ↳ underestimating speed
 - ↳ reduces worries & results in careless behaviour
- addict develops aggressive behaviour disturbing family life and loss of jobs
- ↳ economical constraints — increased criminal attitude
- if taken by pregnant mother, it crosses placenta and reaches fetus
 - ↳ abnormality of systems in fetus
 - ↳ mental retardation & abnormal limb development
- withdrawal symptoms :
 - * tremors
 - * high pulse rate
 - * sweating
 - * visual hallucination
 - * restlessness

Cigarette smoke:

- was initially considered as a recreational drug
- but now considered abusive b/c of presence of harmful chemicals like nicotine, tar, carbon monoxide & irritants

01. Carbon Monoxide

- Hb molecule in RBC has high affinity for CO against O_2
- reducing O_2 carrying capacity of our blood
- increases deposition of fats in blood vessels therefore resulting in Arteriosclerosis

02. Tar

- forms a yellowish lining on inner side of lungs
- activates carcinogenic conditions developing lung cancer
- paralyses cilia of our respiratory track
- emphysema

03. Irritants

- Hydrogen Cyanide & Acrolein
- Bronchitis
- stimulates the release of excessive mucus
- ↳ frequent coughing: smoker's cough

04. Nicotine

- initially acts as a stimulant & gives relaxation to muscles
- but later on dulls the senses
- increased adrenaline, risk of developing blood clots & thrombosis
↳ heart attack risk
- narrows blood vessels, makes blood sticky
- Cardiovascular diseases

Disorders in body because of tobacco smoke:

i. Chronic Bronchitis

- * narrowing of the air passage way b/c of excessive mucus
- * frequent coughing and wheezing
- * can also lead to lung infection

ii. Emphysema

- * end result of chronic bronchitis
- * coughing results in bursting of alveoli
- * decreased surface area for gaseous exchange
- * in normal individuals s.a can be retained back but for smokers it is not possible

iii. Lung Cancer

iv. Cancerous condition of mouth / throat / pancreas / kidneys / urinary bladder

v. During Pregnancy

- * CO reduces oxygen availability for fetus
- * nicotine narrows blood vessels and reduces uteroplacental circulation leading to lower maternal weight gain
- * abnormal brain development, slow growth of fetus, increased risk of premature birth

tumor: unwanted guest without interphase

no contact inhibition gives pain as it is being pushed, they can press capillaries and enter blood further into any organ

contact inhibition: when a layer of tissue touches another layer of tissue, it stops its growth

DROPS

- insulin can be extracted & purified

ADVANTAGES

- ↳ faster & more efficient way of getting results instead of selective breeding
- ↳ improve crop quality or crop yield
- ↳ introduce herbicide resistance
- ↳ insect and pest resistance can be developed and inserted into plants — plant produces toxins which would discourage insects from eating the crop
- ↳ sterile insects could be created

DISADVANTAGES:

- ↳ what benefits one plant may harm another
- ↳ not ethical to interfere
- ↳ GM crops could be harmful — toxins in human blood
- ↳ GM crops can cause allergic reactions in people
- ↳ pollen produced by the plants would be toxic and harm insects that transfer it b/w plants