

SHORT QUESTIONS

1. Define pharmacology and distinguish it from pharmacy.

Ans: Pharmacology:

Pharmacology is the study of drug composition properties and called applications. The sources of drugs are also studied in pharmacology

Pharmacy:

A store where medicinal drugs are dispensed and sold. The science or practice of the preparation and dispensing of medicinal drugs is called pharmacy

Difference between Pharmacology and Pharmacy

Pharmacology is not synonymous with Pharmacy which is the name used for a profession Clinical pharmacology was present in the Middle Ages Early pharmacologists focused on natural substances mainly plant extracts Pharmacology developed in the 19th century as a biomedical science.

2. Differentiate between medicinal drug and addictive drug.

Ans: Medicinal Drugs:

A pharmaceutical drug or medicinal drug is defined as any chemical substance used in the diagnosis cure, treatment, or prevention of disease.

Addictive drugs:

Some drugs often make person dependent on them or addicted Those may be called as addictive drugs. By using such drug, the person's body becomes familiar to it and the user cannot function well without it.

3. Differentiate between analgesic and antibiotic.

Ans: Analgesic:

The term analgesic is of Greek origin meaning 'without pain'. An analgesic generally refers to a medication that is intended to reduce or eliminate pain. Analgesia is defined as being in a physical state of experiencing no pain.

Some examples would be prescription and over the counter medications such as tylenol, ibuprofen, aspirin, morphine, opiates, hydrocodone or other narcotic drugs.

Antibiotic:

An antibiotic is a medication or substance that inhibits or eradicates bacterial growth. These compounds may be synthetic or naturally occurring substances.

The following medications are included categorized as antibiotic drugs: amoxicillin, ampicillin, penicillin, tetracycline, cephalexin, metronidazole, ciprofloxacin, and erythromycin (among others). The appropriate medication choice is determined by the strain of bacteria it is intended to eliminate.

Analgesics:

Analgesics (painkillers) reduce pain e.g. aspirin, paracetamol etc.

Antibiotics:

Antibiotics inhibit or kill bacteria and treat bacterial infections e.g. tetracycline, cephalosporin etc.

4. Differentiate between Sedatives and Vaccines.

Ans: Sedatives:

Sedatives induce sedation by reducing irritability or excitement e.g. diazepam.

Vaccines:

Vaccines are used to develop immunity against viral and bacterial infections e.g. vaccines against small pox whooping cough, hepatitis B etc.

5. What is marijuana? To which category of addictive drugs, it belongs?**Ans: Marijuana (Hashish):**

Marijuana is a hallucinogen, which is smoked. It is obtained from the flowers stems and leaves of the marijuana plant (*Cannabis sativa* and *indica*) Small doses of marijuana result in a feeling of well-being that lasts two to three hours High doses increase heart rate it also affects the production of sperms in men and also weakens the short-term memory

Category:

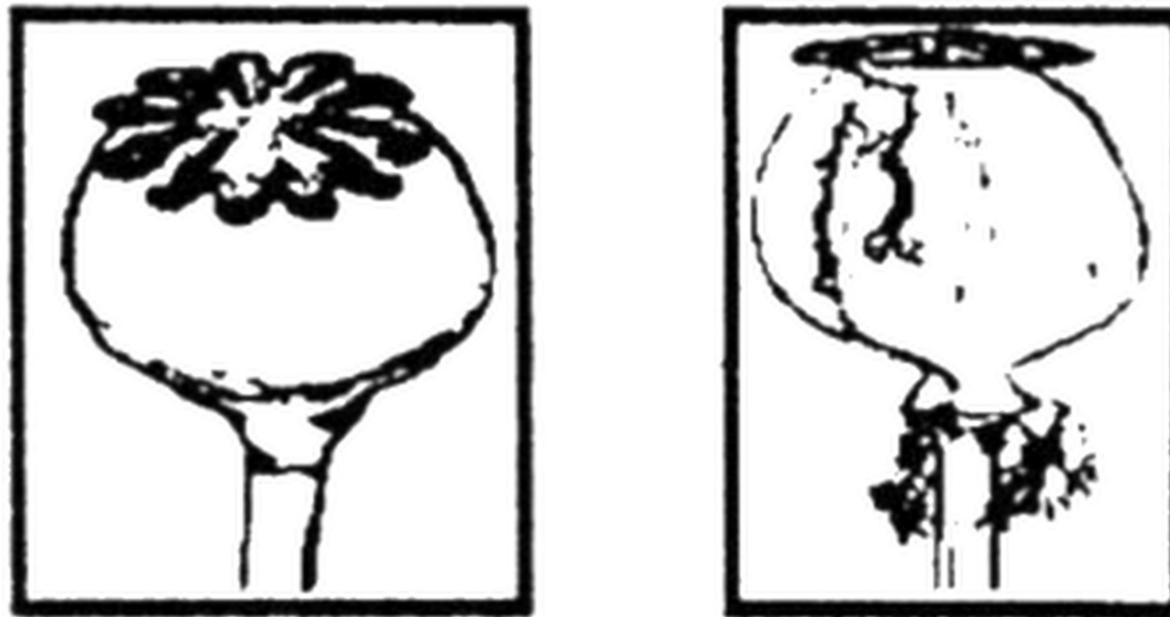
Marijuana belongs to hallucinogens drugs

6. Differentiate between narcotics and hallucinogens.**Ans: i. Narcotics:**

Narcotics are strong painkillers These drugs are often prescribed in conjunction with other less potent painkillers (paracetamol or aspirin) These are used to relieve pain for patients with chronic diseases such as cancer These are also used to relieve acute pain after operations but some people may abuse narcotics for ecstatic effects

ii. Hallucinogens: Hallucinogens are the drugs that cause changes in perception, thought, emotion and consciousness. The group includes mescaline, which comes from a cactus and psilocin, which comes from a mushroom

Physiologically hallucinogens effect on the sympathetic nervous system causing dilation of pupils, constriction of some artenes and rise in blood pressure



The Fruits of the opium poppy plant

UNDERSTANDING THE CONCEPT

1. What are the sources of drugs? Give examples.

Ans: Sources of Drugs:

Drugs are obtained from the following sources

i. Synthetic Drugs:

Such drugs do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs e.g. aspirin

ii. Drugs from Plants and Fungi:

Many important medicines are obtained from plants and fungi. These medicines include antibiotics, cardiotoxic and certain analgesics. The antibiotic penicillin comes from a fungus. The cardiotoxic known as digitalis is used to stimulate the heart. It is made from the leaves of purple flowered plant foxglove.

The pain reliever morphine is made from opium, which comes from the juice of opium poppy plant

iii. Drugs from Animals:

Drugs obtained from animals are usually their glandular products Fish liver oils, musk, bees' wax, certain hormones and antitoxins are obtained from animal sources

iv. Drugs from Minerals:

Several common drugs are produced from minerals. The mineral iodine is used in making tincture of iodine, a liquid that helps prevent infection when to cuts and bruises. The powder form of silver nitrate is applied on wounds to stop bleeding and prevent infection.

v. Drugs from Bacteria:

Many antibiotics e.g. streptomycin is obtained from bacteria

2. Write a note on sedatives, narcotics and hallucinogen.

OR

Briefly explain the major categories of addictive drugs.

Ans: Addictive Drugs:

The following are major categories of addictive drugs

i. Sedatives:

These drugs interact with central nervous system to depress its activities
Sedative drugs induce dizziness, lethargy, slow brain function and depression
Long-term use of sedative induce suicidal thoughts.

ii. Narcotics:

Narcotics are strong painkillers. These drugs are often prescribed in conjunction with other less potent painkillers (paracetamol or aspirin). These are used to relieve pain for patients with chronic diseases such as cancer. These are also used to relieve acute pain after operations but some people may abuse narcotics for ecstatic effects.

Morphine and codeine:

Morphine and codeine are the narcotics, derived from opium (poppy). Morphine acts directly on the central nervous system to relieve pain. Morphine has a high potential for addiction. The most commonly abused narcotic is heroin, which is a semi-synthetic drug from morphine. It affects the central nervous system and causes drowsiness.

iii. Hallucinogens:

Hallucinogens are the drugs that cause changes in perception, thought, emotion, and consciousness. The group includes mescaline, which comes from a cactus, and psilocin, which comes from a mushroom.

Physiologically, hallucinogens affect the sympathetic nervous system, causing dilation of the pupil, constriction of some arteries, and a rise in blood pressure.

Marijuana (Hashish)

Marijuana is a hallucinogen, which is smoked. It is obtained from the flowers, stems, and leaves of the marijuana plant (*Cannabis sativa* and *C. indica*). Small doses of marijuana result in a feeling of well-being that lasts two to three hours. High doses increase heart rate. It also affects the production of sperm in men and also weakens short-term memory.

3. Describe the main groups of antibiotics.

Ans: Antibiotics:

An antibiotic is a drug that kills or retards the growth (reproduction) of bacteria. They are the chemicals produced by or derived from microorganisms (bacteria and fungi).

Bactericidal and Bacteriostatic antibiotics

Antibiotics are used to treat many different bacterial infections. Some antibiotics are 'bactericidal', meaning that they kill bacteria. Others are 'bacteriostatic', meaning that they work by stopping bacterial growth.

Main Groups of Antibiotics:

Three major groups of antibiotics are described below

i. Cephalosporins:

Cephalosporins interfere with synthesis of bacterial cell wall and so are bactericidal. Cephalosporins are used to treat pneumonia, sore throat, tonsillitis, bronchitis, etc.

ii. Tetracyclines:

These are broad-spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclines are used in the treatment of infections of the respiratory tract, urinary tract, intestine, etc. Tetracyclines are not used in children under the age of 8, and specifically during periods of tooth development.

iii. Sulpha Drugs - Sulfonamides:

Sulpha drugs are synthetic antibiotics that contain a sulfonamide group. Sulfonamides are broad-spectrum bacteriostatic antibiotics. They inhibit the folic acid synthesis in bacteria. They are used to treat pneumonia and urinary tract infections.

4. Write a note on resistance against antibiotics.

Ans: Antibiotic Resistance:

Antibiotics are extremely important in medicine but unfortunately bacteria are capable of developing resistance to them. Such bacteria are not affected by commonly used antibiotics.

Bacteria have number of ways of developing resistance. Sometimes, their internal mechanism stops the working of antibiotic. Bacteria can also transfer the genes responsible for antibiotic resistance between them so such resistant bacteria make it possible for other bacteria to acquire resistance. Another reason for increasing antibiotic resistance in bacteria is their use in diseases in which they have no efficacy (e.g. antibiotics are not effective against infections caused by viruses).

Resistance to antibiotics poses a serious and growing problem because some infectious diseases are becoming more difficult to treat. Some of the resistant bacteria can be treated with more powerful antibiotics, but there are some infections that do not eliminate even with new antibiotics.

5. Describe the mode of action of vaccines.

Ans: The Mode of Action of Vaccines:

Pathogens contain special proteins called "antigens". When pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis of "antibodies". Antibodies bind to pathogens and destroy them. In addition "memory cells" are produced, which remain in blood and provide protection against future infections with the same pathogen.

When a vaccine i.e. weakened or dead pathogen is introduced into bloodstream the white blood cells are stimulated. B-lymphocytes recognize the weakened or dead pathogens as enemies and start producing antibodies against them. These antibodies remain in blood and provide protection against pathogens. If real pathogens enter blood, the already present antibodies kill them.

