



SOURCES OF DRUGS

By:

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Intended learning outcomes

- 1 Explain plant sources of drug
- 2 Illustrate the method used for the extraction of drug from plant sources
- 3 Explain animal sources of drug
- 4 Illustrate the method used for the extraction of drug from animal sources
- 5 Identify mineral sources of drug
- 6 List microbiological Sources
- 7 Compare between Synthetic and Semi synthetic Sources
- 8 Mention the use of recombinant DNA technology as sources of drug
- 9 List advantages and disadvantages of recombinant DNA technology as sources of drug



Plant sources

Plant source is the oldest source of drugs.

Most of the drugs in ancient times were derived from plants.

Almost all parts of the plants are used i.e. leaves, stem, bark, fruits and roots.





Caffeine used to treat fatigue and migraines, find caffeine in coffee beans, tea leaves, cacao pods, kola nuts and garana

Aspirin used for pain relief and anti-clotting, Salix is found in willow bark



Atropine is used in the treatment of nerve gas poisoning it is extracted from the belladonna plant

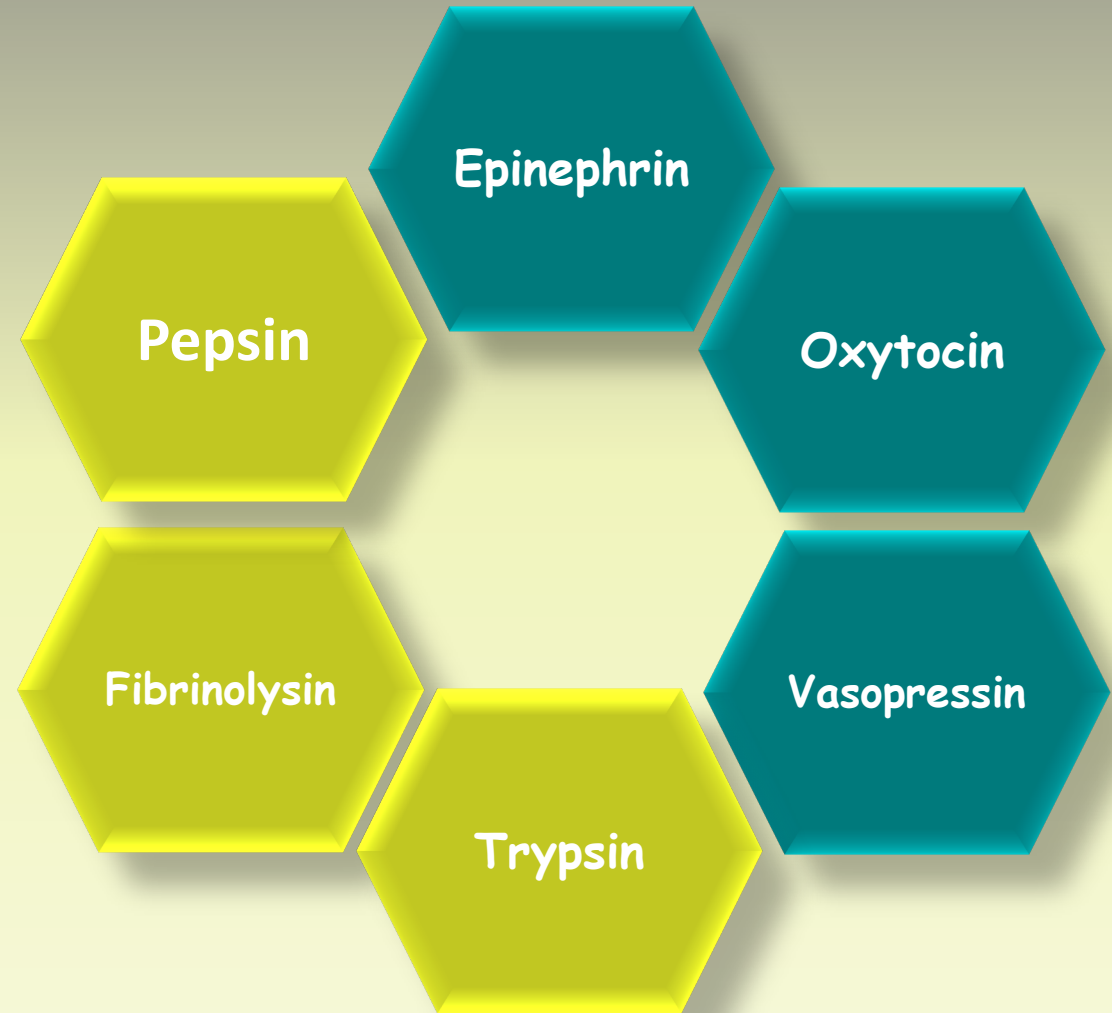
Extraction of Atropine

The alkaloid of atropine was extracted from belladonna plant using water extraction method. The purification of atropine was accomplished using several chromatographic Thin Layer chromatography (TLC)



Animal sources

Some animal products are used as a medicine in treatments. The main group of animal products used in medicine are animal extracts , hormones and enzymes



Extraction of Insulin

Insulin was extracted first from cows and then from pigs by separating the Langerhans cells and the insulin protein present in them from these animals. Then the insulin is purified and packed for human use.



Mineral sources

Feromine is an iron supplement used to prevent and treat anemia

Dynamisan is a dietary supplement that includes many vitamins, minerals including chromium chloride, manganese sulfate, copper oxide

Centrum is a dietary supplement that contains antioxidants of vitamin E, zinc and selenium

Stresstabs is a dietary supplement rich in minerals including magnesium, calcium, copper, potassium, iodine, iron, zinc and many vitamins





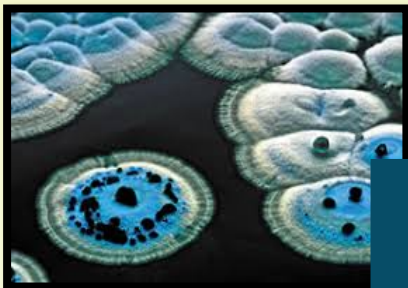
Microbiological Sources



Penicillium is a fungus which gives penicillin.



Actinobacteria give Streptomycin.

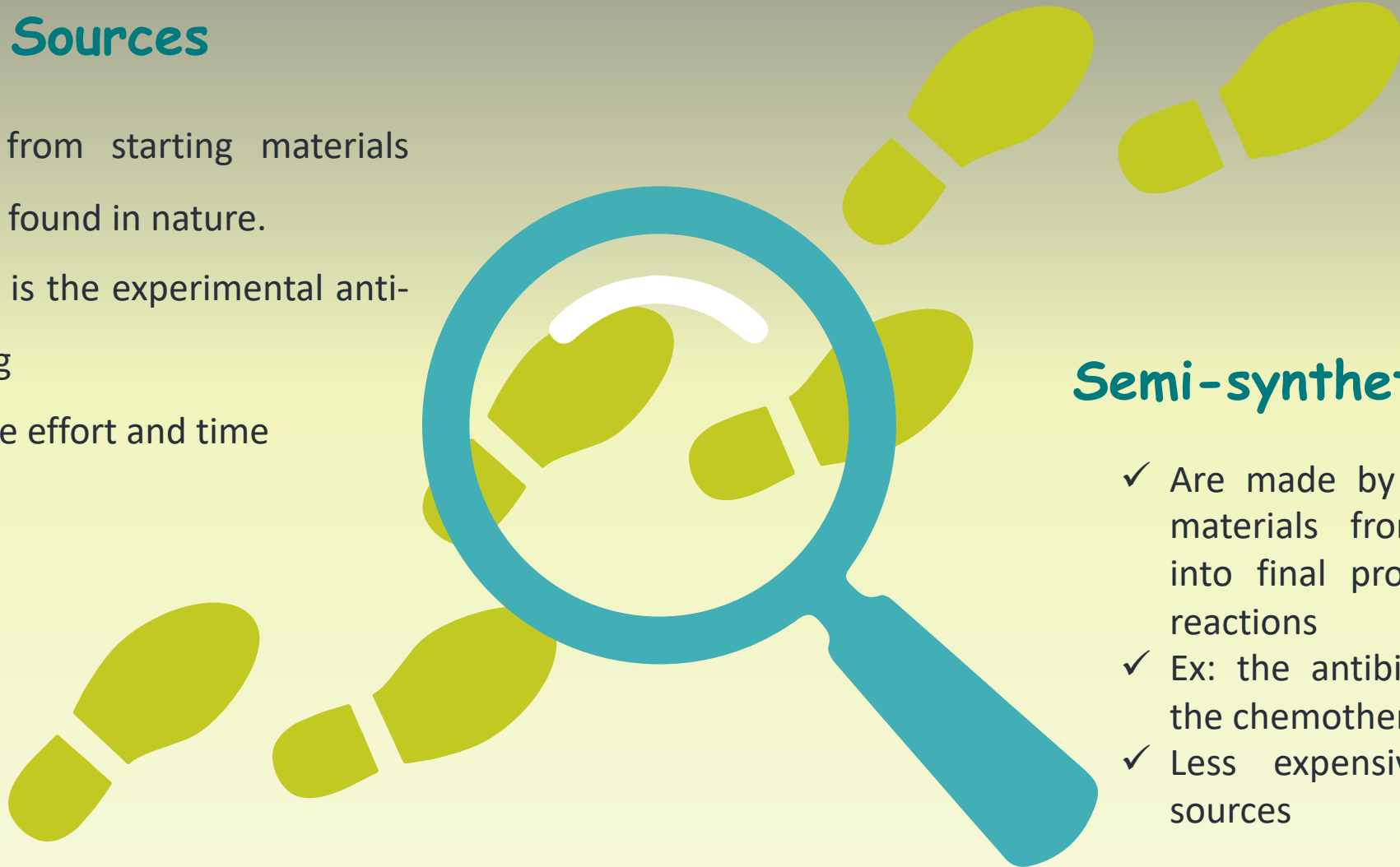


Tobramycin are obtained from streptomyces



Synthetic Sources

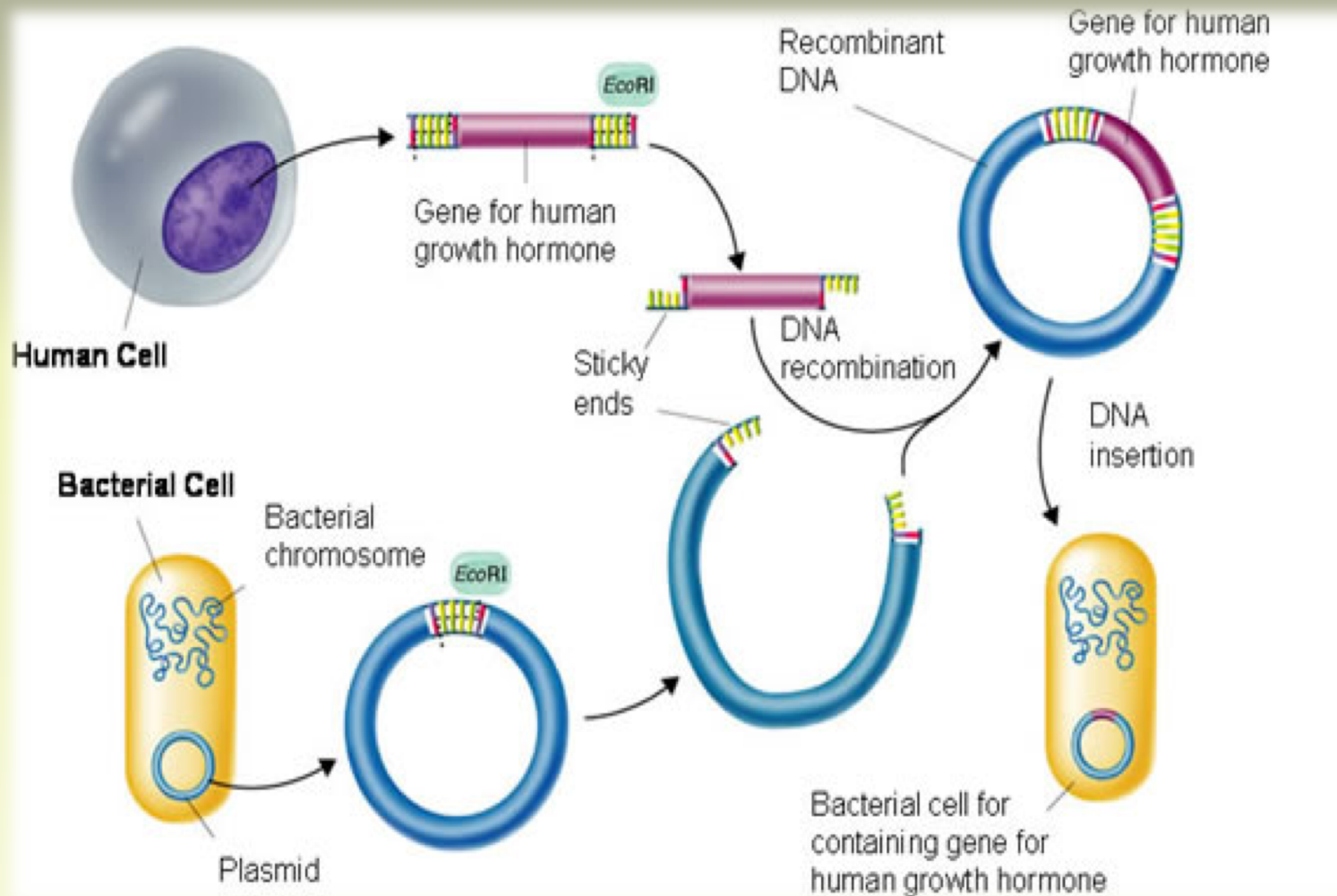
- ✓ Are come from starting materials that are not found in nature.
- ✓ An example is the experimental anti-malaria drug
- ✓ It takes more effort and time



Semi-synthetic Sources

- ✓ Are made by converting starting materials from natural sources into final products via chemical reactions
- ✓ Ex: the antibiotic, penicillin, and the chemotherapy drug.
- ✓ Less expensive than Synthetic sources

Recombinant DNA technology source



Recombinant DNA technology

Advantages:

- ❖ Huge amounts of drugs can be produced.
- ❖ Drug can be obtained in pure form.
- ❖ It is less antigenic.



Disadvantages:

- ❖ Well equipped lab is required.
- ❖ Highly trained staff is required.
- ❖ It is a complex and complicated technique.



References

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THANK YOU