

Date . Tues 2nd April /2024

CHEMISTRY DEPARTMENT

Senior four Topic: Chemicals for consumers.

Subtopic: Chemicals in medicine.



Lesson objective. By the end of this lesson, you should be able to understand the importance of chemicals in medicine.

One of the chemistry's most significant contribution is in the field of medicine. Chemicals are used to produce medicines. The effective use of chemicals in medicine has revolutionized our ability to prevent and cure diseases, and Will continue to be a pivotal component of medical advancement.

Categories of medicine.

Medicine is any substance used in treating a disease or relief from pain **OR.** Medicine are chemicals or compounds used to halt, prevent disease, ease symptoms, or help in the diagnosis of illnesses . Medicines are classified as,

- (a) **Traditional medicine** , Is the one that utilizes culture and spiritual treatments , mostly obtained locally as extracts from mainly plants, applied singularly or in combination to treat , diagnose and prevent illnesses or cure symptoms.
- (b) **Modern medicine**, is the one that utilizes scientific knowledge, technology and evidence based practices to diagnose, treat and prevent illnesses and diseases.

Students group activity.

In your respective groups, use Internet or any other source of information such as textbooks, and make research about the different traditional medicines you use in every day life, their uses(functions) and the different modern medicines, the classifications of different modern medicine, their examples and uses (functions) of each example of medicine. Share your group answers to the rest of other groups in class.

(a) Traditional medicine.

	Traditional medicine	Use (function)
1.	Aloe vera	Treats malaria, allergic reactions, treats diabetes, skin disease. Treats burns.
2.	Guava leaf extract.	Treats malaria, ulcers, cough, diarrhea
3.	Paw paw leaf extract	Improves liver and kidney function.
4.	Garlic extract	Controls cholesterol levels, regulates blood sugar, reduces cancer risks, treats fungal and bacterial infection.
5	Momordica foetida (Bombo)	Used for fever, malaria infection, treating body odour.
6	Vernonia amygdalina. / Bitter leaf (omululuza)	Treats malaria, relieves fever, regulates blood sugars (treats diabetes) , lowers cholesterol, improves digestion.

Traditional medicines contain **active ingredients that provide relief from pain** (especially those for that work on pain) and others for bacterial infections work by **killing the bacteria thus preventing them from multiplying.**

Side effects associated with uses of traditional medicines.

The use of traditional medicines though often perceived as natural and safe, can have a dark side with potential side effects that can have serious and even life threatening. These side effects include,

- Allergic reactions and rashes
- Headache.
- Stomachache.
- Diarrhea.
- Kidney and liver damage

Mitigations to above side effects.

- Use of small amounts of traditional medicines other than excess.
- Use of modern medicine to counteract the effect of traditional medicine.

(b) Modern medicines. These are classified into three types,

- (I) Analgesics.
- (II) Antibiotics.
- (III) Psychotherapeutic medicine

What are Analgesics?

Analgesics are medicines that are used to relieve pain. They are also known as painkillers or pain relievers. Technically, the term analgesic refers to a medication that provides relief from pain without putting you to sleep or making you lose consciousness.

Antibiotics

Antibiotics are used to treat or prevent some types of bacterial infection. They kill bacteria or prevent them from reproducing and spreading.

What are Psychotherapeutic agents?

Psychotherapeutic agents are used to treat psychosis, which refers to a group of mental disorders for example depression, schizophrenia, manic-depressive disorders and so on. They affect mood and behavior.

1) Examples of analgesics, their uses(functions) , their side effects and mitigations.

Medicine .	Use of medicine	Side effects	Mitigations
1) Aspirin	Used to relieve pain from conditions of muscle aches and fever .	Abdominal pain , chest pain	-Taking right prescription. - Seek immediate Medical attention. Switch to different medicine.
2) Paracetamol	Used for pain relief and reducing high temperatures	Loss of appetite. Excessive sweating. Nausea Allergic reactions.	Follow recommended dose. Switch to different medicine. Seek immediate Medical attention.
3) Codeine	Used for pain relief and cough suppression.	Nausea. Vomiting. Fatigue. Headache.	Taking enough rest. Seek immediate Medical attention. Switch to different medicine.

How do analgesics work (function).

Analgesics work by inhibiting the sensation of pain, thus providing relief from pain.

Analgesics work by inhibiting the sensation of pain.

2) Examples of antibiotics.

Example of Antibiotics	Use (function)	Side effects	Mitigations.
1) Penicillin	Treat infections bacterial infections	Fatigue, dizziness, Nausea, vomiting, allergic reactions.	Seeking immediate Medical attention. Taking plenty of fluids. Taking enough rest.
2) Streptomycin	Treating bacterial infections for example tuberculosis	Chest pain, dizziness, Nausea, vomiting,	Seeking immediate Medical attention. Taking plenty of fluids. Taking enough rest.
3) Amoxicillin	Treating chest infections for example Phenomenia.	Nausea, allergic reactions, fatigue, vomiting, dizziness.	Seeking immediate Medical attention. Taking plenty of fluids. Taking enough rest .

How do antibiotics work (function)

Antibiotics work by **killing** the bacteria, thus preventing them from multiplying.

3) Examples of psychotherapeutic medicine, their uses, side effects and mitigations.

Example of psychotherapeutic medicine .	Use (function)	Side effects.	Mitigations
1) Stimulants.	-Awakens alertness, confidence and energy. -Treats attention-deficit hyperactivity disorder (ADHD)	Loss of appetite. Headache. Nausea. Vomiting. Increased blood pressure.	Taking enough rest Seeking immediate Medical attention. Taking medicine in right amount as prescribed.
2) Antidepressants.	Treats generalized body anxiety disorder. Treats stress and depression.	Dizziness Loss of appetite. Feeling headache. Loss of libido. Erectile dysfunction.	Seeking immediate Medical attention. Taking medicine in right amount as prescribed.
3) Antipsychotics.	Treating bipolar disorders such as extreme moods (stabilizing mood) and	Dizziness. Weight gain. Headache. Sexual problems.	Taking medicine at different times of the day. Seeking immediate

	reducing anxiety.		Medical attention.
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Evaluate (similarities and differences between traditional medicines and modern medicines)

(a) Similarities.

- (I) Both aim to prevent and treat illnesses.
- (II) Both use natural ingredients from plants and animals.

(b) Differences.

	<u>Traditional medicine</u>	<u>Modern medicine.</u>
1)	Less effective in healing illnesses.	More effective in healing illnesses.
2)	Increased risks of side effects.	Often less side effects.
3)	Has no dosage instructions.	Has required dosage instructions.
4)	Often lacks standardization in preparation.	Strong standards in production.

SPECIAL RESEARCH.

Contributions of chemical industry to people's lives.

In your respective groups, make research and discuss the different contributions of chemical industry to people's lives. (10 contributions)

END.