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The Importance of Using Graphic Organizers in Conducting a Practical Lesson on "Carbohydrates: Structure and Properties" in Medical Chemistry

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Annotation: This article discusses the significance of using diagrams and graphic representations during practical lessons to explain the types of carbohydrates and their importance in the human body within the topic "Carbohydrates: Their Structure and Properties" in medical chemistry. It is emphasized that graphic organizers help visualize complex chemical concepts, systematize them, and enhance students' deeper understanding of the subject.

Introduction

Carbohydrates are organic compounds that play essential biological and chemical roles in living organisms. Understanding their structure, classification, and biological significance may at times be challenging for students. Therefore, along with traditional teaching methods, the use of graphic organizers (clusters, concept maps, Venn diagrams, table organizers, etc.) increases the efficiency of the teaching–learning process.

Graphic organizers are didactic tools designed to visually categorize, structure, and demonstrate relationships among information. They help to:

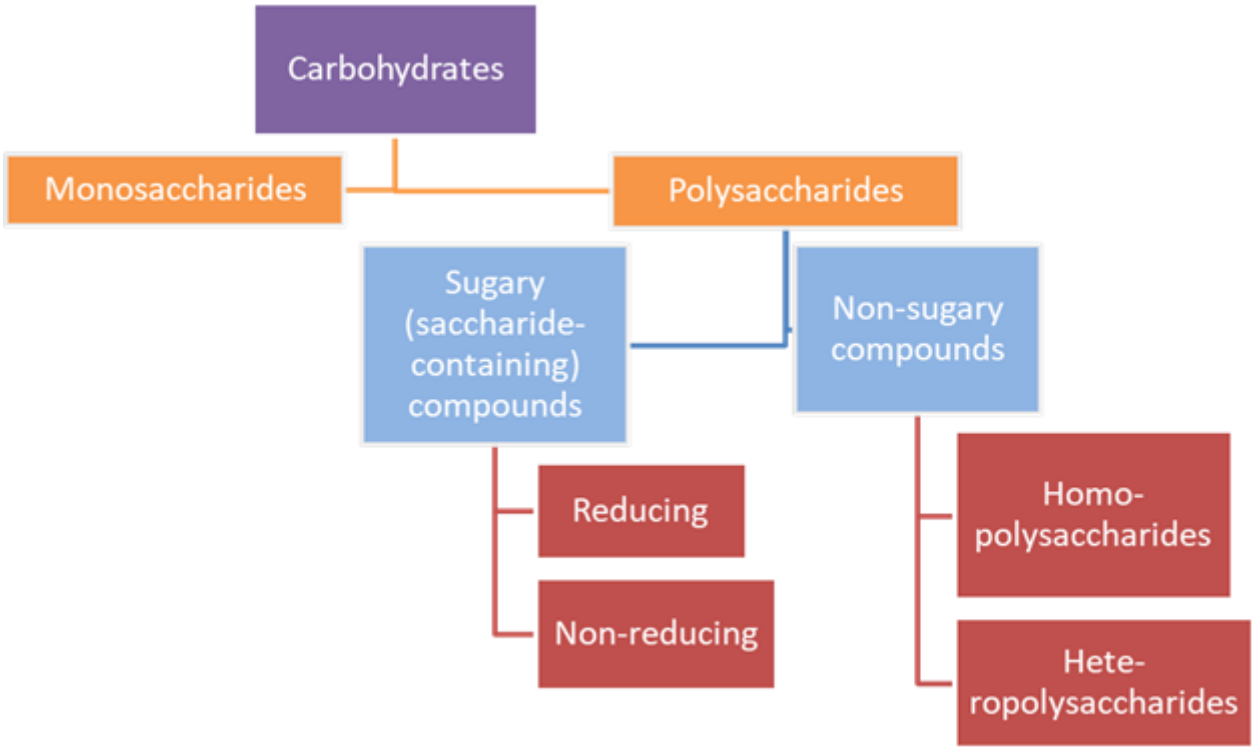
- ✓ divide the topic into meaningful parts,
- ✓ identify cause-and-effect relationships,
- ✓ highlight key concepts,
- ✓ facilitate memorization.

Cognitive psychology notes that visual information is processed 3–4 times faster than verbal information. For this reason, representing complex structural data in chemistry through graphic organizers is of great importance.

Graphic Organizers Used in Explaining Carbohydrates

1. Cluster

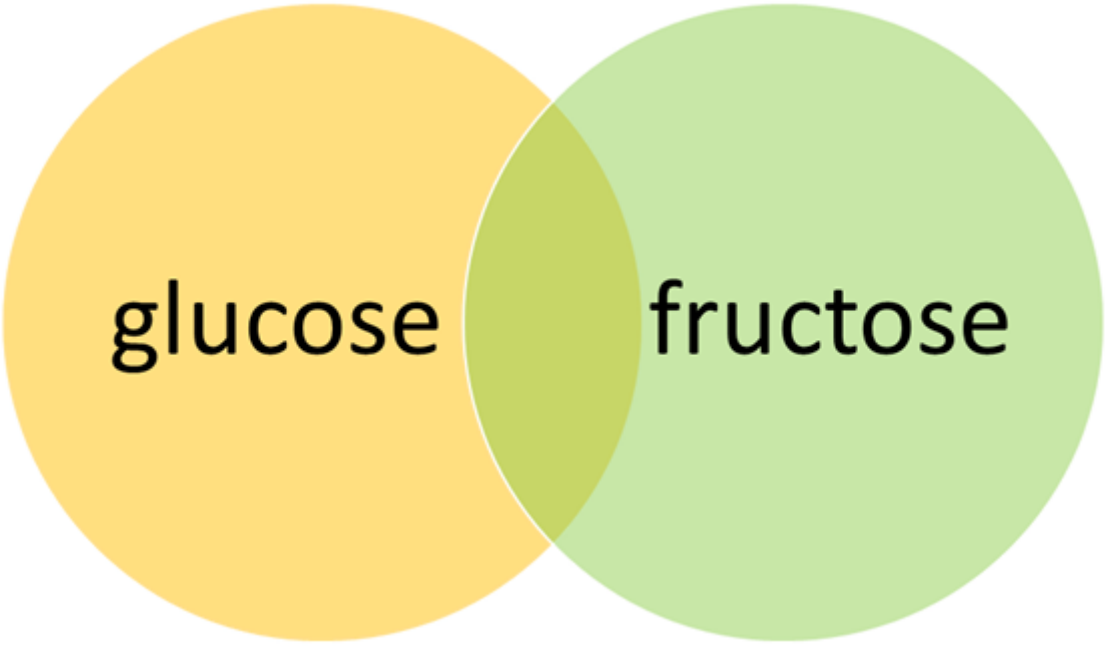
A cluster diagram is useful for demonstrating the general classification, functions, and chemical composition of carbohydrates. For example, the cluster: Monosaccharides – Disaccharides – Polysaccharides effectively illustrates the hierarchical structure of carbohydrate groups.



2. Venn Diagram

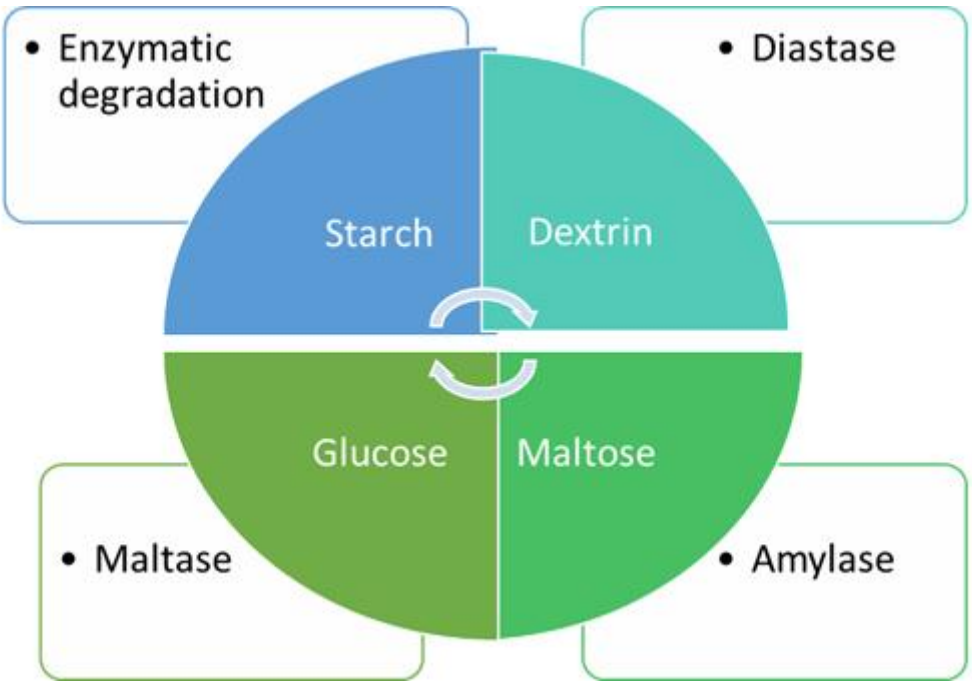
A Venn diagram is effective for comparing the similarities and differences between monosaccharides and disaccharides.

For example, it can be used to illustrate the common and distinguishing features of glucose and fructose



3. Concept Map

A concept map is used to thoroughly explain the structure of carbohydrates, the cyclic forms of glucose, and their energetic functions.



4. Table Organizer

A table organizer is used to compare the chemical structure, molecular formula, and biological significance of carbohydrates.

Example:

According to the Number of Carbon Atoms	Types and Examples	Chemical Formula	Physiological Significance	Sources
Pentoses	Arabinose			
	Xylose			
	Xylulose			
	Ribose			
	Deoxyribose			
Hexoses	Glucose			
	Fructose			
	Galactose			
	Mannose			

Advantages of Using Graphic Organizers

1. Simplifies complex information.

Structural formulas, reaction pathways, and classifications become visually accessible.

2. Reveals structural relationships.

For example, the connection between the open-chain and cyclic forms of glucose can be clearly demonstrated.

3. Enhances active student engagement.

Learners complete the organizers themselves, enabling independent analysis of the topic.

4. Facilitates memory retention.

Visual materials are stored more effectively in long-term memory.

5. Develops analytical thinking.

Comparing the structure, function, and properties of carbohydrates promotes critical thinking skills.

Carbohydrates constitute one of the most significant yet complex sections of chemistry and biology. Graphic organizers improve students' comprehension of the topic, simplify intricate biochemical processes, and increase learning activity. Therefore, the use of graphic organizers during lessons on carbohydrates substantially enhances the effectiveness of the educational process.

References

1. R. Mavlonova, D. Abdurahimova. *Pedagogical Mastery (Study Guide)*. Tashkent: "Science and Technology", 2009, 176 pages.
2. B. L. Faberman et al. *Modern Teaching Methods in Higher Education Institutions*. Tashkent, 2002.
3. A. Efimova. *The Teaching Profession*. Tashkent, 2002.
4. N. T. Alimkhodjayeva, G. G. Suleymanova, Z. A. Ikramova, Kh. S. Tadjiyeva. *Medical Chemistry, Part 1*. Tashkent, 2024.
5. G. A. Ikhtiyarova, D. J. Bekchanov, M. Sh. Akhadov. *The Importance of Modern Technologies in Teaching Chemistry (Study Guide)*. Tashkent, 2020.