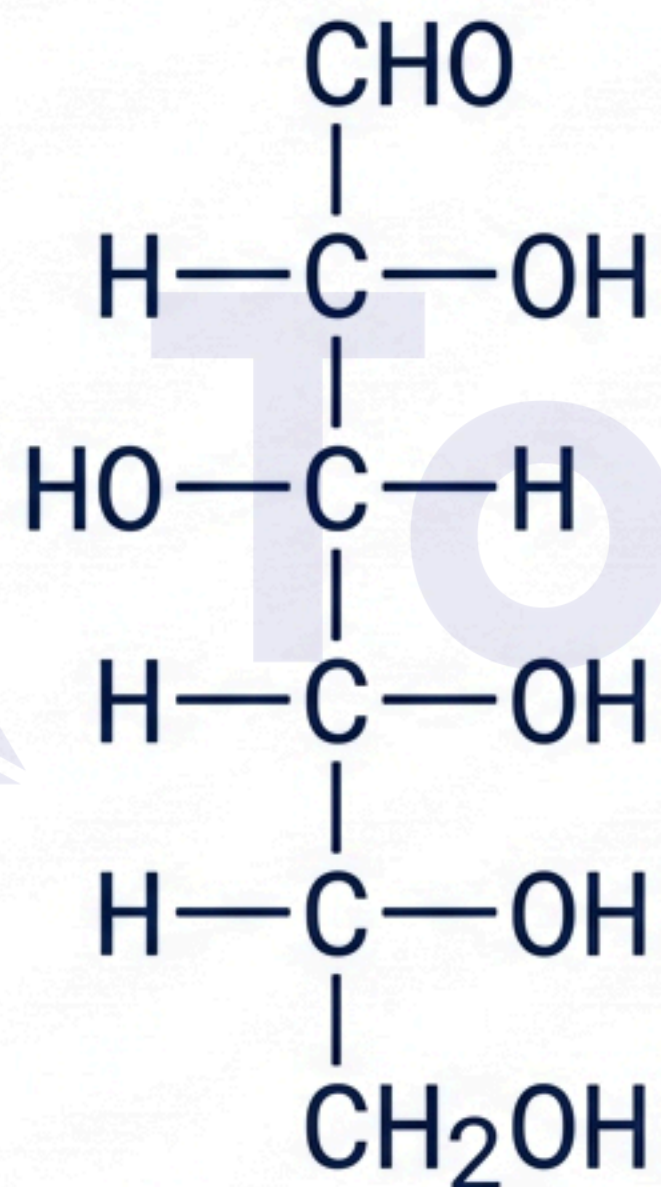


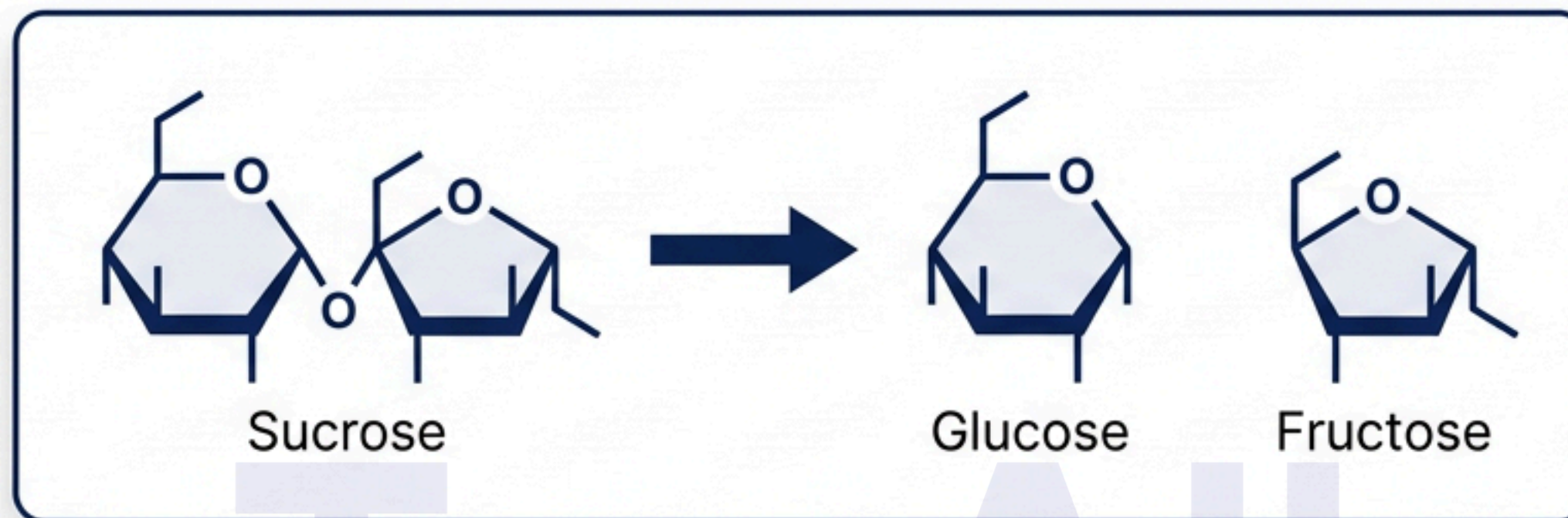
Preparation of Glucose



Laboratory and Commercial
Hydrolysis Routes

METHOD 01

Hydrolysis of Sucrose (Cane Sugar)



The Process

Sucrose is boiled in an alcoholic solution.

The Yield

Yields exactly equal amounts of Glucose and Fructose.

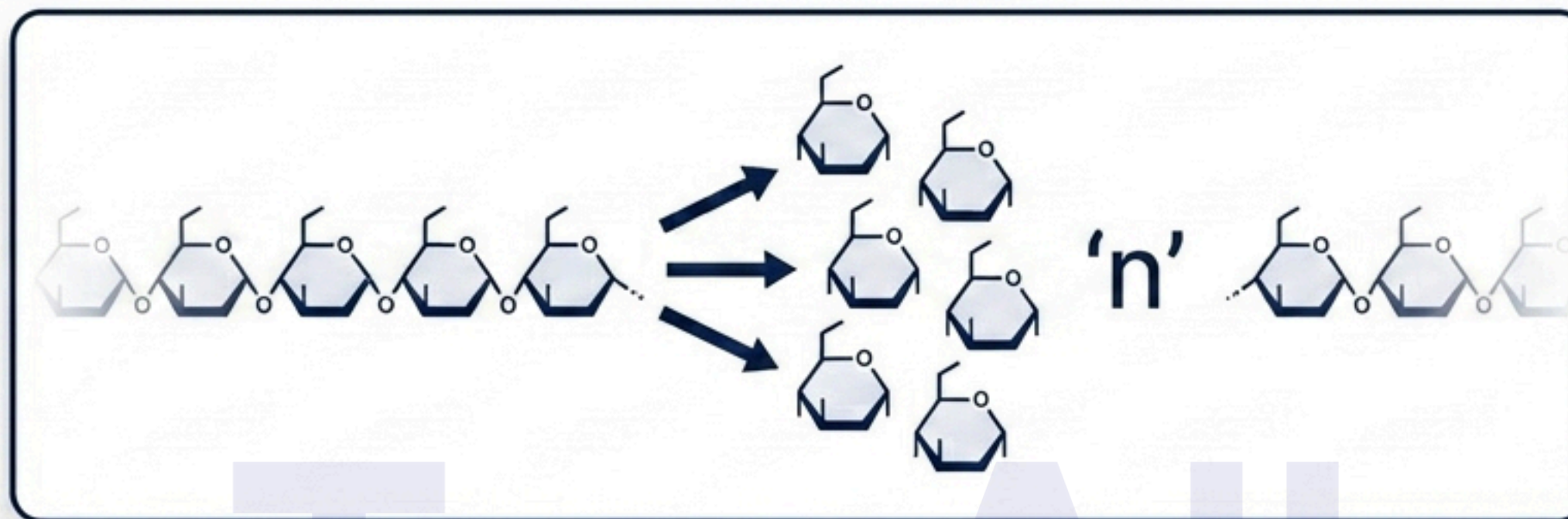
Catalyst: dil. HCl or H₂SO₄

Scale: Laboratory



METHOD 02

Hydrolysis of Starch or Cellulose



The Source

Derived from starch or cellulose (complex polysaccharides).

The Process

Requires boiling under elevated temperature and pressure.

Temp: 393 K

Pressure: 2-3 atm

Catalyst: dil. H_2SO_4

Scale: Commercial





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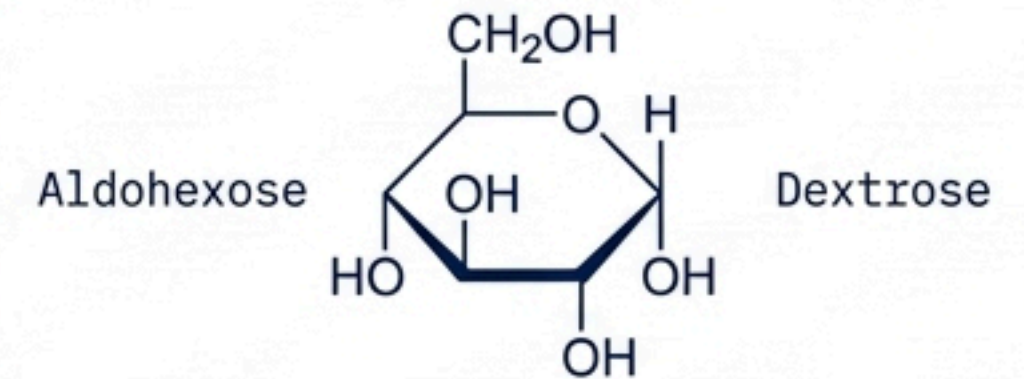
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The Significance of D-Glucose

Glucose Profile Card



Natural Abundance

The most abundant organic compound on Earth. Occurs freely in nature, specifically in ripe grapes, sweet fruits, and honey.

Structural Foundation

Acts as the fundamental monomer building block for larger, critical carbohydrates like Starch and Cellulose.

Biological Fuel

Also known as dextrose, it serves as the essential, instant source of energy for living systems.

Key Takeaway: Glucose is the ultimate starting point for both cellular energy and complex plant architecture.

Comparison of Preparation Methods

	Sucrose (Cane Sugar)	Starch / Cellulose
Starting Material	Disaccharide	Polysaccharide
Reagents & Conditions	dil. acid alcoholic solution	dil. acid 393 K 2-3 atm
Products	Glucose + Fructose (1:1 ratio)	Only Glucose (' n ' molecules)
Primary Application	Laboratory scale	Commercial scale

Both methods rely on acid-catalyzed hydrolysis, but scale and starting material dictate the severity of the reaction conditions.



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