

CHEM 110L, Experiment 1 – Carbohydrates

- Chemical tests of standards & identifying an unknown

$[C_n(H_2O)_n]$, Monosaccharide Nomenclature

Penultimate stereochem - (FG) - (# C's) - ose

D - aldo - - tri -

L - keto - - tetr -

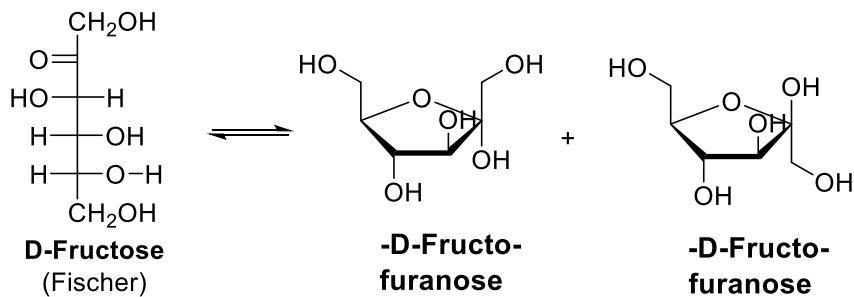
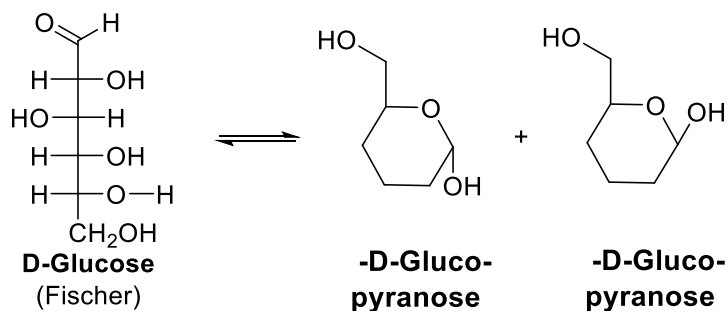
- pent -

- hex -

Ex. D-Glucose = D-aldohexose

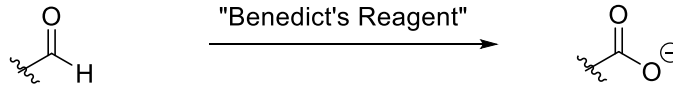
Mix & Match! Write the name of a different monosaccharide type and ask a neighbor draw it.

Pyranoses and Furanoses

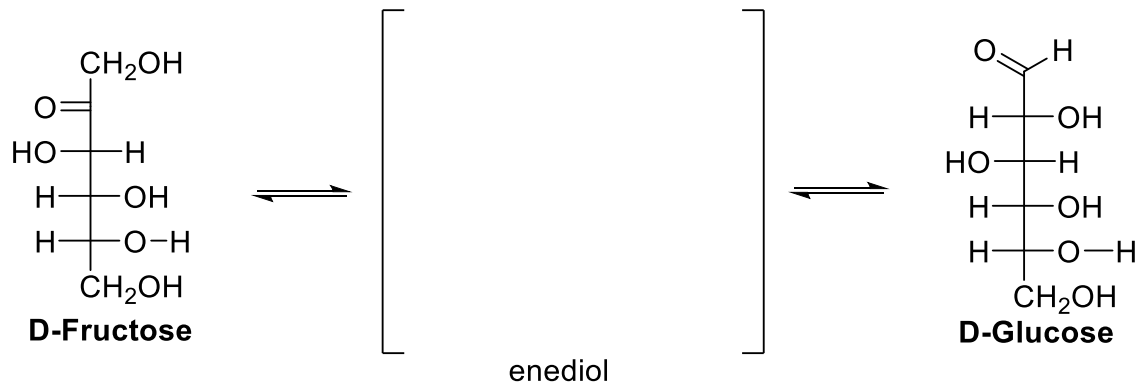


Benedict's Test for Reducing Sugars

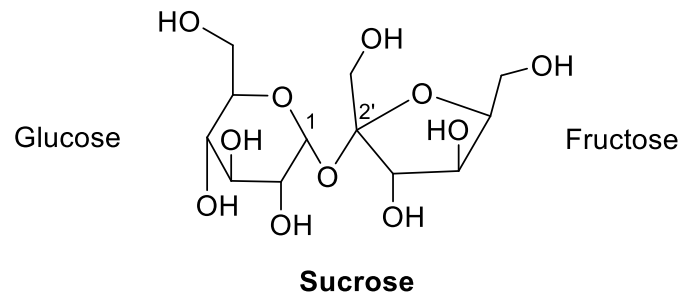
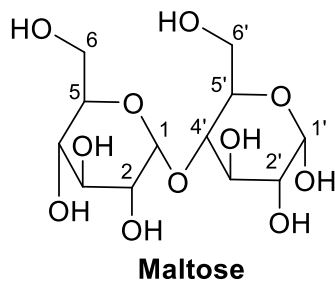
- Aldose can be oxidized to carboxylic acid, positive test



- Ketoses isomerize into aldoses to give positive test, slower reaction

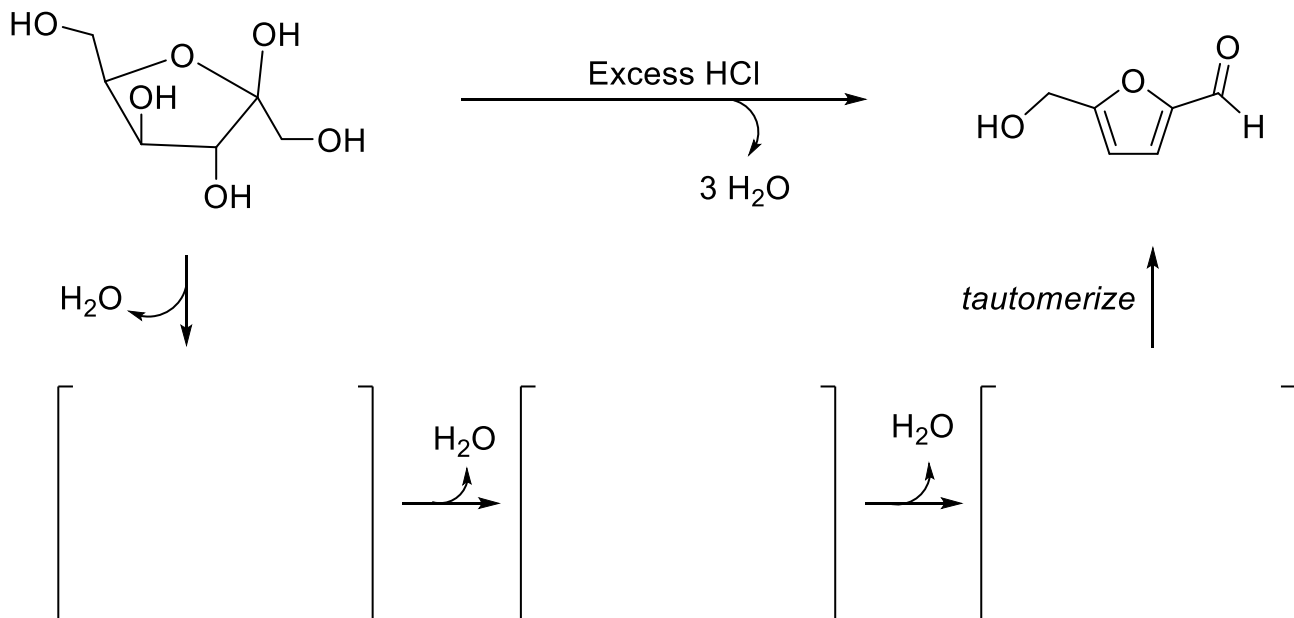


- Sugars without available anomeric carbon give negative test

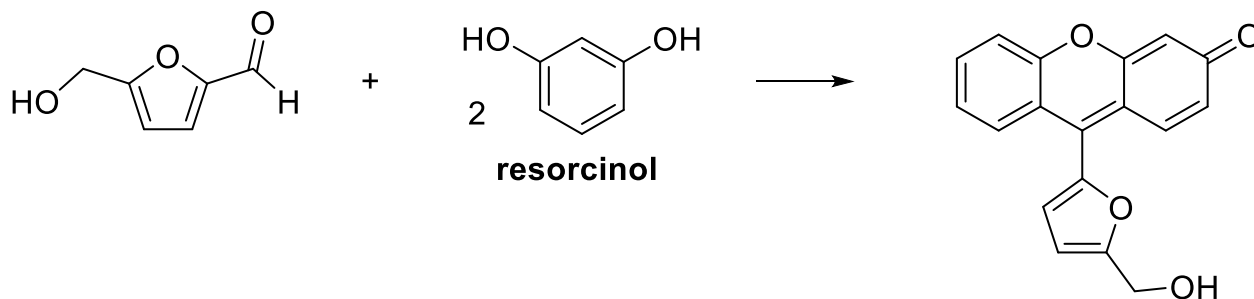


Seliwanoff's Test for Ketoses

- Ketoses undergo dehydration significantly faster than aldoses



- Observable part of Seliwanoff Test



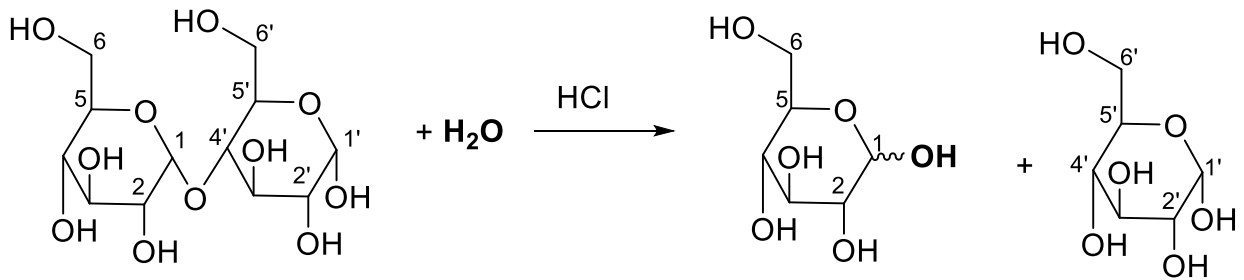
- What do you think will happen to an aldose?

Iodine Test for Polysaccharides

- What is a polysaccharide?

Hydrolysis followed by I₂ and Benedict's test

Maltose - 1,4-glycosidic bond



Was hydrolysis successful?

Perform I₂ test for polysaccharides & Benedict's test for reducing sugars

Experiment 1 Summary: