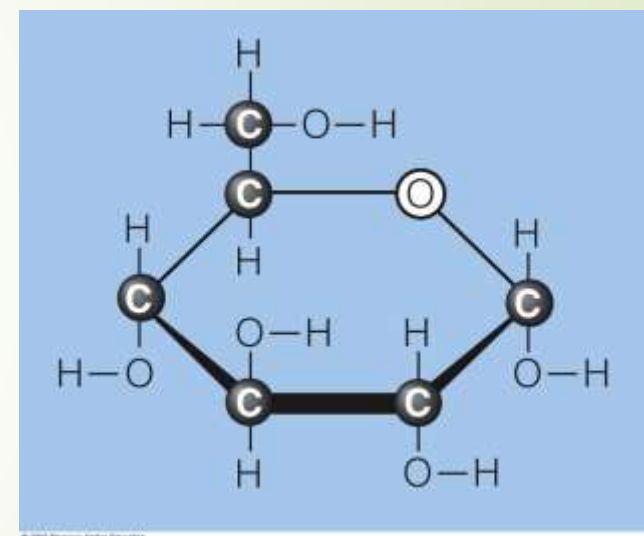
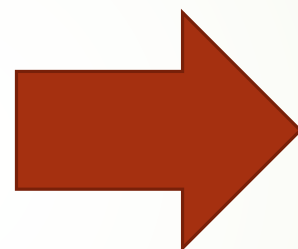
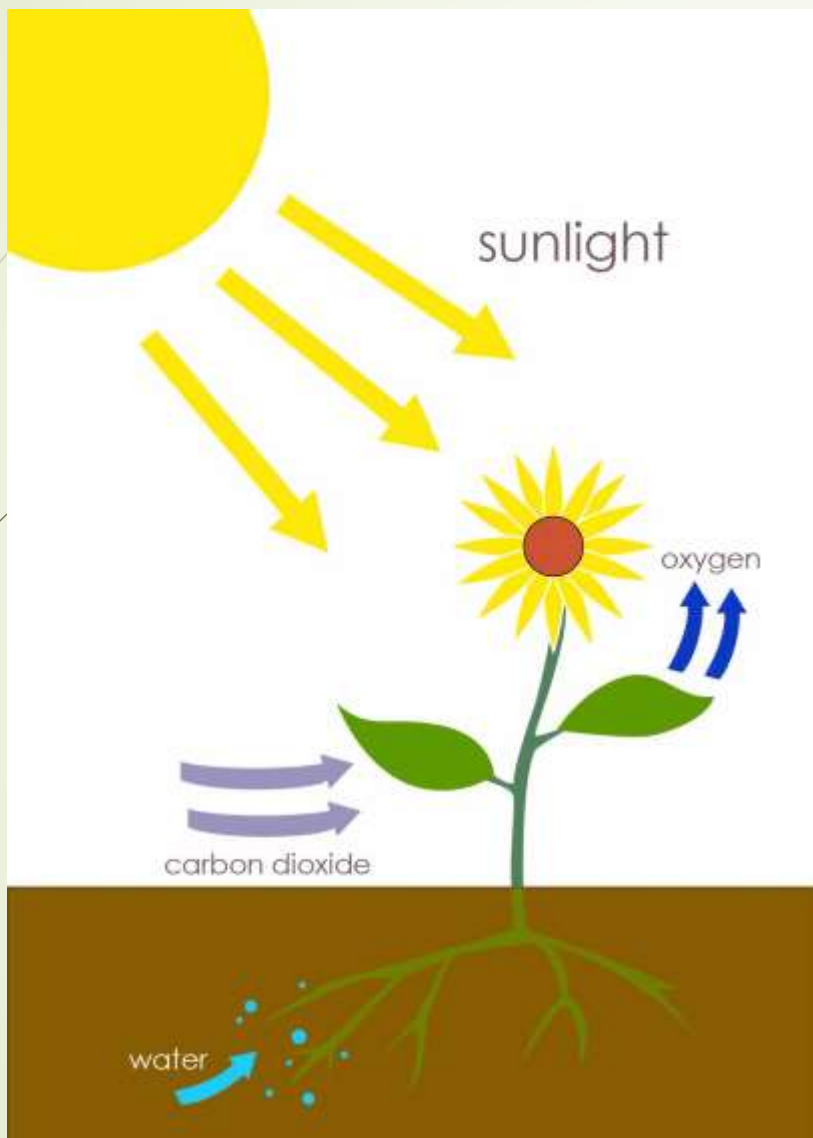




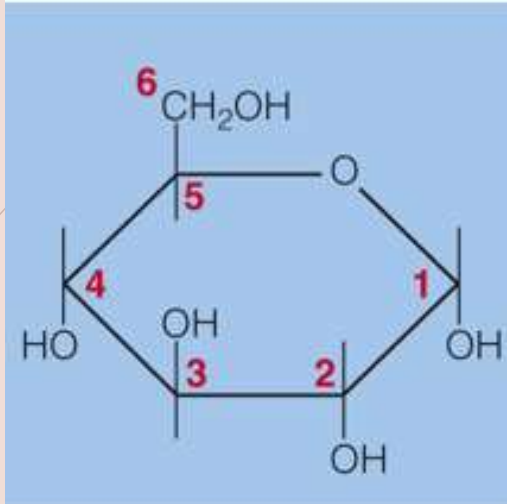
# Phytochemistry

Carbohydrates !

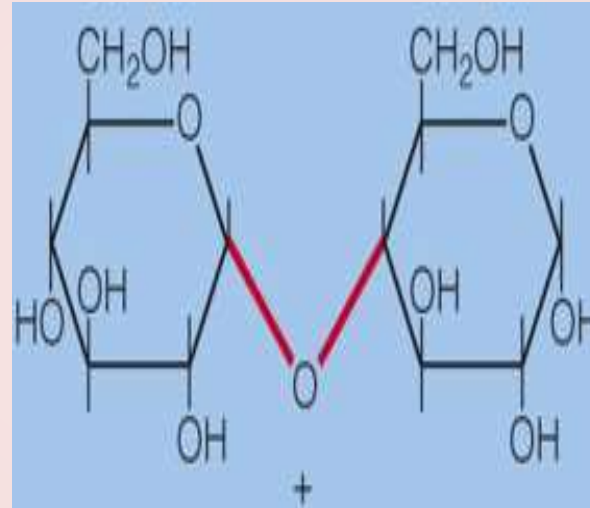


# 1.1Types

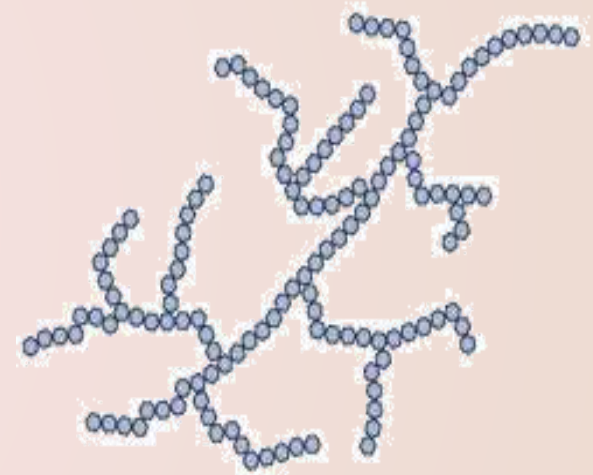
## Monosaccharide



## Disaccharide



## Polysaccharide



# 1.2-Important notes

All of carbohydrates contains **C, O, H** and almost in constant ratio between O & H ?! Exceptions !!

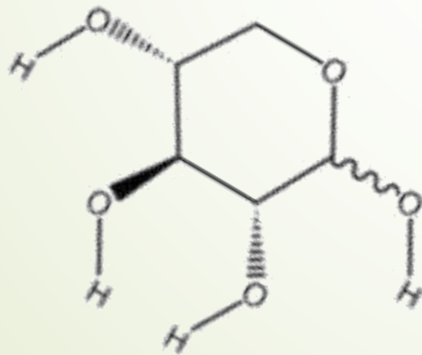
- All of them give **+ve with Molisch's** test
- All monosaccharides possess reducing power due to **????** And give positive with Fehling and Barfoed's reagent respectively
- All Disaccharide with 1,4 glucosidic linkage has reducing power but less than monosaccharide so it gives -ve with Barfoed's reagent.
- Sucrose gives -ve with Fehling and Barfoed's reagent
- The glucosidic linkage is susceptible to acid hydrolysis making it possible to degrade polysaccharide and disaccharide to monosaccharide
- The enzymatic hydrolysis of Glucosidic linkage depends on the type of the linkage Alpha or Beta (starch and cellulose)

# Pentoses and methyl Pentoses

## Xylose

- Bial's test: Gives blue
- Aniline acetate paper test : Red
- Phloroglucin / HCl test : Red color turned to violet ppt
- Action of Conc Acid: gives furfural

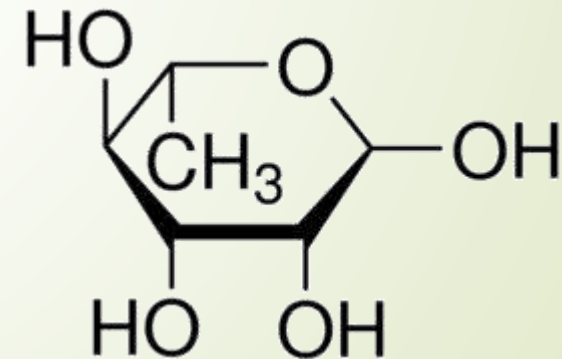
(Can be used for estimation of pentoses in presence of hexoses)



## Rhamnose

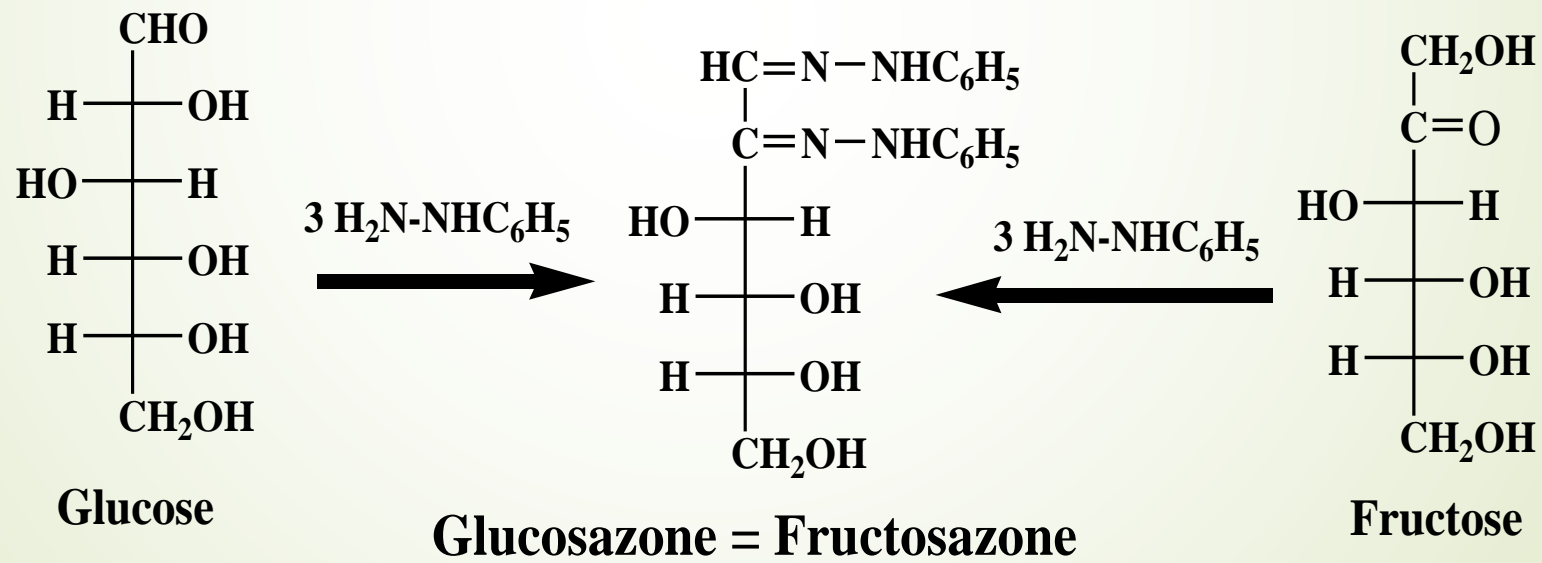
- Bial's test: Gives green
- Aniline acetate paper test : yellow
- Phloroglucinol / HCl test :-ve
- Action of Conc Acid: gives methyl furfural

(Can be used for estimation of pentoses in presence of hexoses)



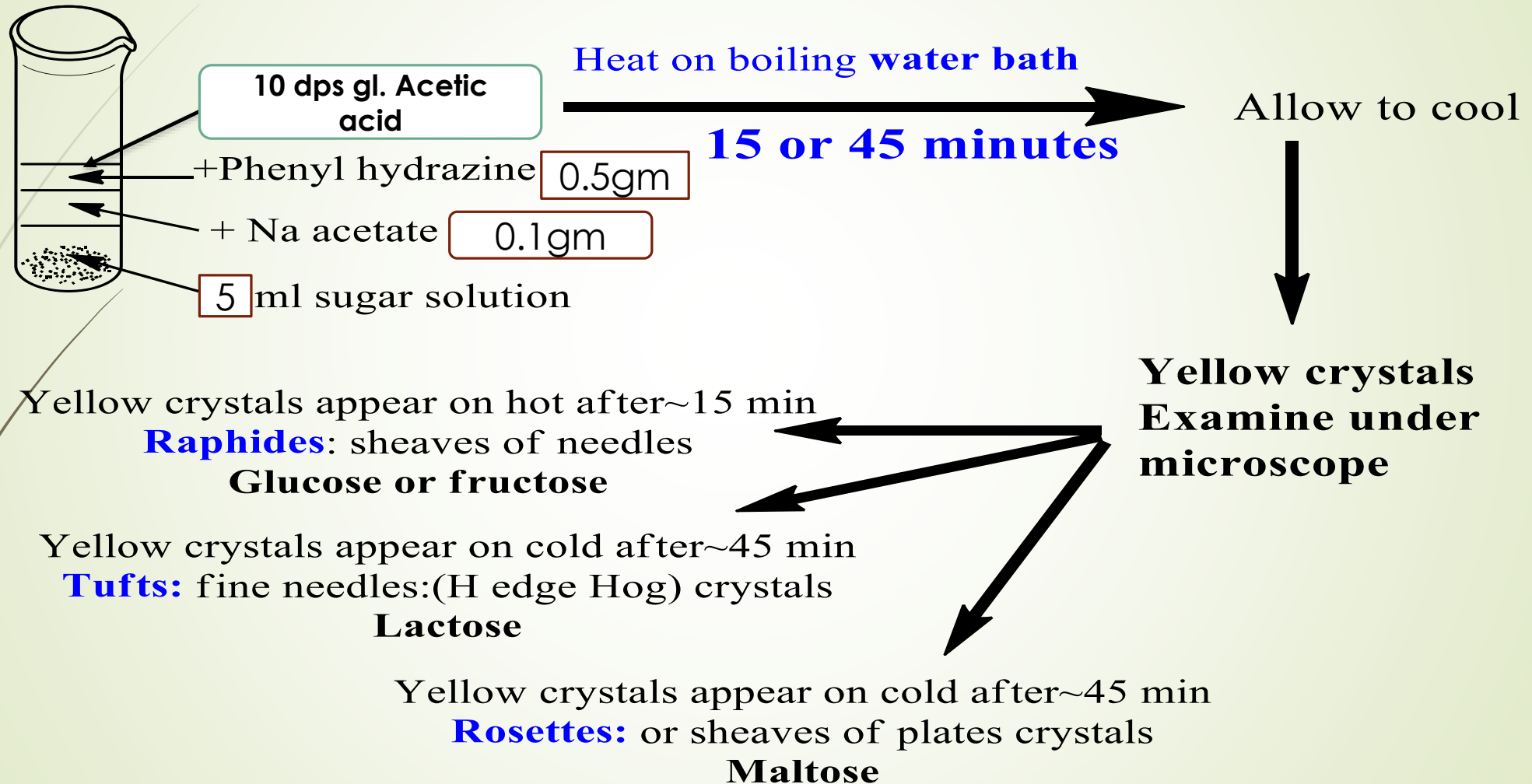
# The osazone formation

- During osazone formation, the hydroxyl group adjacent to the carbonyl group is oxidized to keto group which is then attacked by phenyl hydrazine to form osazone





## 2.1-Procedure and results



## 2.2-Important notes

- 1-Before heating, you should have clear solution.
- 2-Avoid sudden cooling as it may break the crystal, examine it without cover.
- 3-Monosaccharide gives osazone on hot after 15 min. of heating, while disaccharides' osazones is not so easy to crystallize and take > 30 min.
- 4-Osazone formation needs  $\alpha$  hydroxy aldehyde or ketone, so it is positive with reducing sugar having free OH in alpha position.
- 5-Glucose and fructose Give the same osazone.
- Sucrose does not give the osazone Why ?!
- 7-Polysacchrides don't give osazone.





*Thanks*