

Name: Owolabi Lydia Tyanuoluwa

Department: Medicine and Surgery

Matric number: 19/MHS01/369

Course: CHEM102

Assignment

1. Classification of Alcohols

- i This is based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is called a primary alcohol (1°). If it is one hydrogen atom, it is called secondary alcohol (2°) and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called tertiary alcohol (3°). Examples: $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol (1°)
- ii This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called glycols have two hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols or structure while trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups. Example: $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ Propanol (Monohydric alcohol)

2. Solubility of alcohols in water and organic solvents.

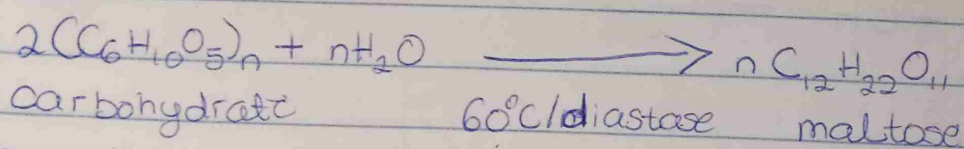
Lower alcohols with up to three carbon atoms in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decrease with increasing relative molecular mass. All monohydric

All monohydric alcohols are soluble in organic solvents.

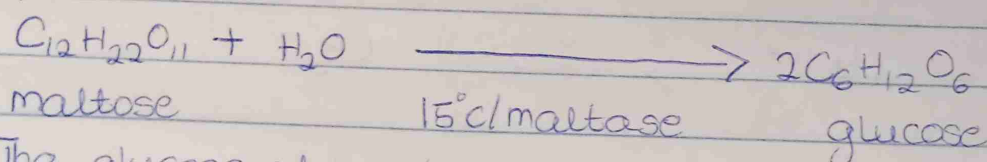
The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bond with water molecules.

3. Production of Ethanol

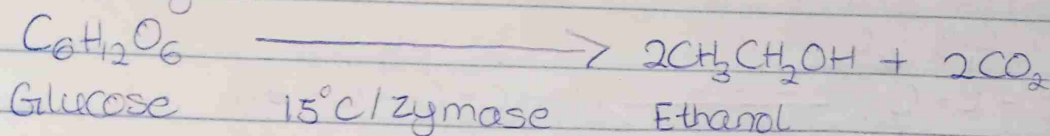
Carbohydrates such as starch are major group of natural compounds that can be made to yield ethanol by the biological process of fermentation. The biological catalysts, enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



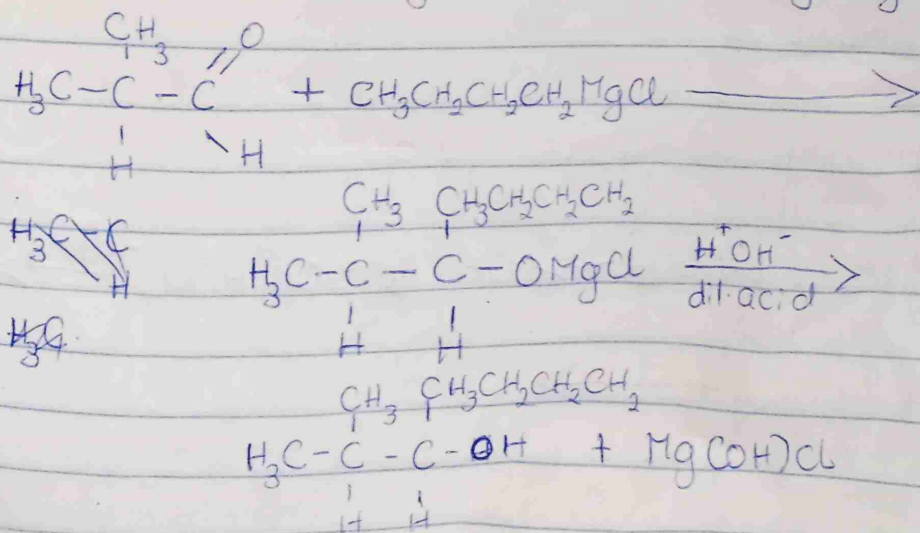
The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C.



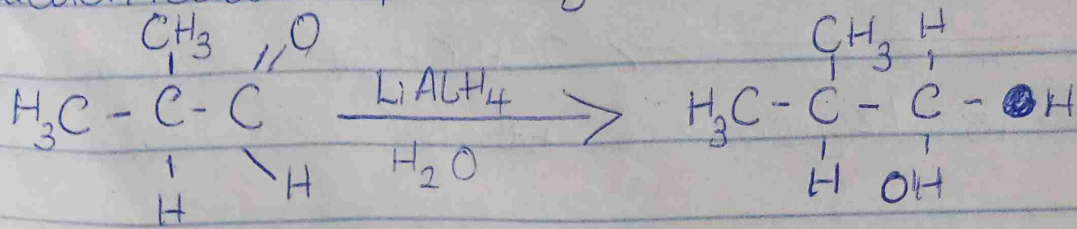
The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.



4. Reaction between 2-methyl propanal and butylmagnesium chloride



7. Reduction reaction of 2-methylpropanal

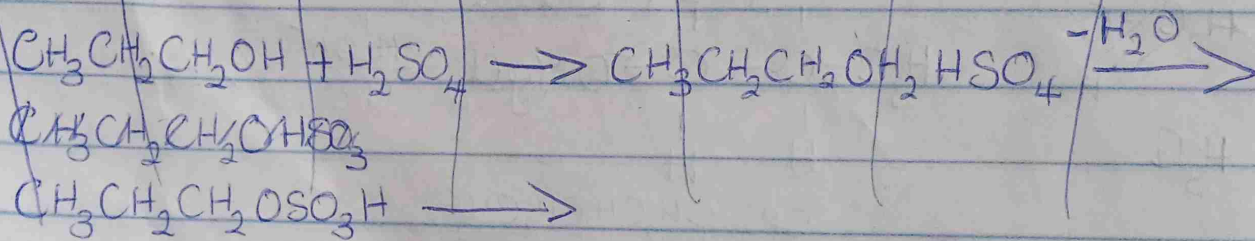


2-methylpropanal

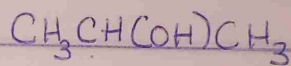
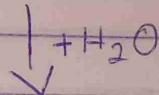
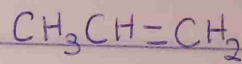
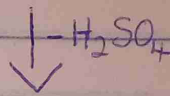
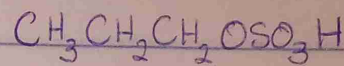
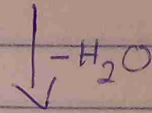
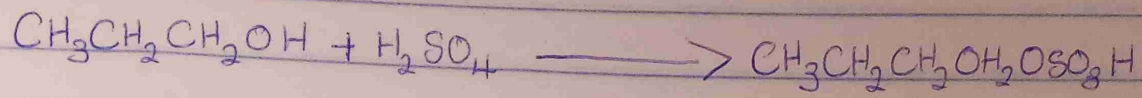
2-methylpropanal

2-methylpropanol

8. Convert Propan-1-ol to propan-2-ol



8. Convert propan-1-ol to propan-2-ol



Propan-2-ol