

Anyakorah Raphael Chinondu

Pharmacy, 100 level

19/MHS11/030

CHM 102 Assignment

1. Classification of Alcohols

A. Classification based on the number of hydrogen atoms attached to the carbon atom containing the OH group

- i. If 2 or 3 hydrogen atoms are attached to the carbon atom bearing the OH group, it is called a primary alcohol (1°).
- ii. If one hydrogen atom is attached, it is called a secondary alcohol (2°).
- iii. If no hydrogen atom is attached to the carbon atom, it is a tertiary alcohol (3°).

Examples.

Methanol CH₃OH (1°)

Propan-2-ol CH₃CH(OH)CH₃ (2°)

B. Classification based on the number of hydroxyl groups they possess. Monohydric alcohols have one OH group present in the alcohol structure. Dihydric alcohols are called glycols, they have 2 hydroxyl groups present in the structure while trihydric alcohols or triols have 3 OH groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than 3 OH groups.

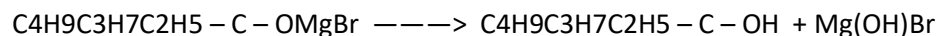
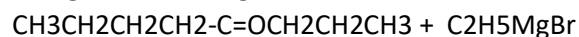
Examples

Monohydric alcohol – Propanol CH₃CH₂CH₂OH

Dihydric alcohol – Ethane-1,2-diol HOCH₂-CH₂OH

2. Grignard synthesis of Alkanols

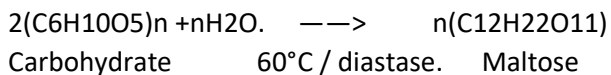
Grignard reagent – C₂H₅MgBr



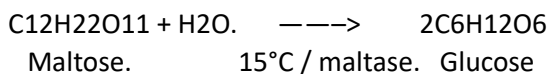
3. Industrial manufacture of Ethanol

Carbohydrate 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

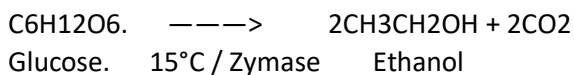
yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. On warming starch with malt to 60° for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



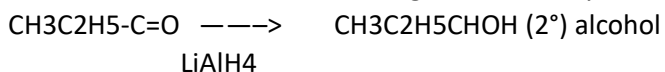
The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°.



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



4. Alkanone. Reduction of alkanone gives secondary alkanols



Alkanals. Reduction of alkanals gives primary alkanols.

