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Dept: Nursing science

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Assignment answers

1. The two main classification of alcohols are:

- a. Based on the number of hydrogen atoms attached to the carbon containing the hydroxyl group. Therefore if the number of hydrogen atoms attached to the carbon atom that has the hydroxyl group are three or two, it's is a primary alcohol, if the hydrogen atom attached is only one it is a secondary alcohols and if there are no hydrogen atom attached to the carbon carrying the hydroxyl group, it is a tertiary alcohol.

Example: CH_3OH -----Methanol(1^0)

$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ -----Propanol(2^0)

- b. Based on the number of hydroxyl groups they possess . Monohydric alcohols have only one hydroxyl group present in the alcohol structure. Dihydric alcohol also called Glycols

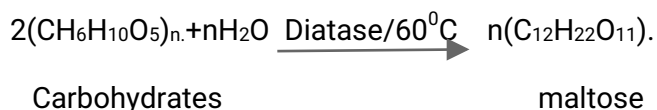
have have two hydroxyl group present in the alcohol structure while Trihydric or triols have three hydroxyl groups present and Polyhydric or polyols have more than three hydroxyl group present in the alcohol structure

Examples: $\text{OHCH}_2\text{CH}_2\text{OH}$ -----Ethane-1,2-diol(dihydric)

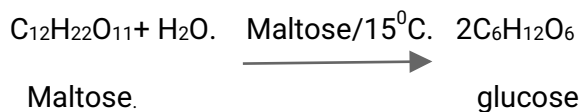
$\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ ---- Propanol (monohydric)

2. Solubility: 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 decreases with increasing relative molecular Mass. All monohydric alcohols are soluble in organic solvent. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

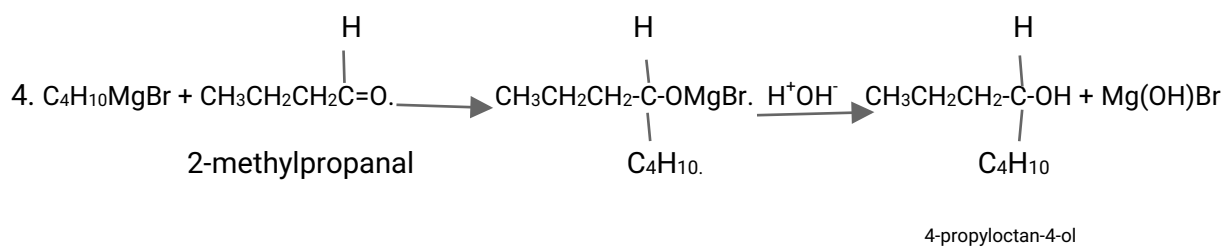
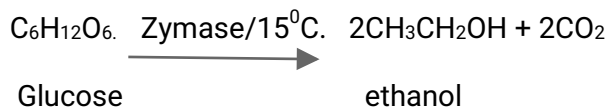
3. Step 1: starch containing materials include molasses, potatoes, cereals, Rice and on warming with salt at 60°C for a specific period of time are converted into Maltose by the enzymes Diatase contained in malt.



Step 2: the maltose is broken into glucose on addition of yeast which contains enzymes maltase and at a temperature 15⁰C



Step 3: the glucose at constant temperature of 15⁰C is then converted into alcohol by enzymes Zymase contained also in yeast



7. The reduction of alkanal using any of these two reducing agents LiAlH₄ and NaBH₄, you get exactly the same organic product.

