Name :- OWOH JENNIFER CHIZEMERE
DEPARTMENT :- NURSING
MATRIC NO :- 19/MHS02/1004
COLLEGE :- MHS

ASSIGNMENT

1 Discuss the two major classification of alkanols. Give two examples for each class

(i) Alkanols are classified based on the number of hydrogen atom attached to the carbon atom having the hydroxyl group. For instance if there are other two or three hydrogen atoms then it is called a primary alkanol, if it is just one hydrogen atom then it is called a secondary alkanol but if it doesn't have any hydrogen atom then it is called a tertiary alkanol

examples

Primary alkanols - ethanol $[CH_3CH_2OH]$ 1°

Secondary alkanols - propan-2-ol $[CH_3CH(OH)CH_3]$ 2°

Tertiary alkanols - methyl propan-2-ol $[(CH_3)_3COH]$

(ii) 2 Based on the number of hydroxyl groups they possess. Alkanols can also be classified based on the number of hydroxyl groups it contains. For instance alcohols that has only on hydroxyl group can be called 'monohydric alcohols, then those alcohols that possess two hydroxyl groups are called dihydric alcohols and those that have three hydroxyl groups present in the structure of the alcohol. Dihydric alcohols are also called glycols.

Examples

monohydric alcohols - $CH_3CH_2CH_2CH_2OH$ (Butanol)

Dihydric alcohols - $CH_3CHOHCH_2CH_2OH$ [Butane-1,3-diol]

Trihydric alcohols - $CH_2OHCH_2CHOHCHOHCH_3$ [petane-1,3,4-triol]

2 In the Grinard synthesis of Alkanols, react a named Grinard reagent with $CH_3CH_2CH_2CH_2C=OCH_2CH_2CH_3$ - show the reaction steps

~~In the Grinard Sythesis of alkanols~~

$CH_3MgBr + CH_3CH_2CH_2CH_2\underset{\underset{O}{\|}}{C}CH_2CH_2CH_3$

(grthard reagent (octan-4-one)

$$Mg(Br)Cl + CH_3CH_2CH_2-\underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2CH_3$$

Tebary alkanol

3 Industrial manufacture of ethanol

carbohydride is converted into maltose at the temperature at a tempature of 60°C and by the enzyme diatase

~~$2C_6H_{10}$ to 60°C~~

$2(C_6H_{10}O_5)_n + H_2O \xrightarrow{60°C/\text{diastase}} nC_{12}H_{22}O_{11}$ (maltose)

maltose is broken down into glucose on addition of yeast which contains the enzyme maltose at 15°C

$C_{12}H_{22}O_{11} + H_2O \xrightarrow{15°C/\text{maltose}} C_2H_{12}O_6$

Glucose

Glucose at constant temp 15°C is converted into alcohol with enzyme zymase contained also in yeast

$C_6H_{12}O_6 \xrightarrow{15°C/\text{zymase}} 2C_2H_5OH + CO_2$

ethanol carbondioxide

4 Determine the product obtained in the dreduction of alkanone and Alkanal use a specific example for each and show the equation of reaction.

$$CH_3-\underset{\underset{H}{|}}{\overset{\overset{O}{\|}}{C}} \xrightarrow{+2H\ LiAlH(CH_3)_2B} CH_3-\underset{\underset{H}{|}}{\overset{\overset{OH}{|}}{C}}-H\ (CH_3CH_2OH)$$

ethanal ethanol

The reduction of Ketones and alkanol

This could also be done by using reducing agents as ~~lithium~~

lithium tetrahydridoaluminate(LH) in ethoxyethane reacts to produce a secondary alcohol eg propane to propen-2-ol.