ONWUOCHA CHISOM DIANNE
PHARMACY
DATE. 14 - 04 - 20
19/MHS11/114
CHEM 102

ETHER

1 a CH_3OCH_3 - Methoxymethane
b $CH_3CH_2OCH_2CH_3$ - Ethoxyethane
c $(CH_3CH_2CH_2CH_2)O$ - Butoxymethane
d $CH_3CH_2OCH_3$ - Methoxyethane
e $CH_3CH_2CH_2OCH_2CH_3$ - Ethoxypropane

2a Physical state: At room temperature, ethers are colourless, neutral liquids with pleasant odours. Lower aliphatic ethers are highly flammable gases or volatile liquids.

b Density: Most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and and some of the aromatic ethers are in fact denser than water.

c Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media.

d Simple ethers are founded commonly in nature but the ethers linkage is present in such natural products as sugars, starches and cellulose.

e Solubility: Ethers are less soluble in water than are the corresponding alcohols; lower molecular weight ethers such as methoxymethane and methoxyethane are fairly soluble in water since the molecule are able to form hydrogen bond with water molecules.

3a Partial dehydration of alcohols: Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate(VI) acid is heated at a carefully maintained temperature of 140°c. This process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as 170 - 180°c, further dehydration to yield alkene occurs.

$$2ROH \xleftarrow{\text{conc. } H_2SO_4 / 140^\circ C} R-O-R + H_2O$$

Eg

$2CH_3CH_2OH \xrightarrow{\text{Conc. } H_2SO_4/140^\circ C} CH_3CH_2-O-CH_2CH_3 + H_2O$

b From Haloalkanes and dry silver (I) oxide

$2RX + Ag_2O \xrightarrow{\text{Warm}} R-O-R + 2AgX$

Eg

$2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{\text{Warm}} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$

Propoxypropane

4a Ethylene oxide is used as a gaseous sterilizing agent.

b Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

c Ethylene oxide is used in the preparation of non-ionic emulsifying agents, plastics, plastrazers and several synthetic textiles