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**NURSING**

**19/MHS02/003**

**CHM102 ETHER ASSIGNMENT**

* CH3OCH3 = Methoxymethane

CH3CH2OCH2CH3 = Ethoxyethane

(CH3CH2CH2CH2)2O = Butoxymethane

CH3CH2OCH3 = Methoxyethane

CH3CH2CH2OCH2CH3 = Ethoxypropane

Properties of Ethers :

* Physical states: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.
* 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 bonds with the water molecules but as the hydrocarbon content of the molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.
* Density: most of the simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.
* Boling point: low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true. The boiling point of ethers tends to approximate those of hydrocarbons of same relative molecular mass from which it can be concluded that the molecules are not associated in the liquid phase as there no suitably available hydrogen for association through hydrogen bonds.
* Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media. Simple ethers are not found commonly in nature but the ether linkage is present in such natural products as sugars, starches and cellulose.
* Method of preparing ether:
* Partial dehydration of alcohols: simple ether are manufactured from alcohols by catalytic reaction. 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 conc.H2SO4/140°C͢ R-O-R + H20

2CH3CH2OH Conc. H2SO4/140C͢ CH3CH2-O-CH2CH3 +H20

* Controlled catalytic hydration of olefins:

2CH3CH=CH2 + H2O ͢ (CH3)2CH-O-CH(CH3)2

 2-isopropoxypropane

* Three uses of ethylene oxide:
* Ethylene oxide is used as a gaseous sterilizing agent.
* It is used in the preparation of nonionic emulsifying agents.
* It is used as an immediate in the hydrolytic manufacture of ethylene glycols.