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MBBS
CHEM 102
19/MHS01/106

1) The two major classifications of alkanols are Primary and Secondary alkanols.

i) Primary alkanols: It is that which has the hydroxyl group connected to a primary carbon atom. It can be denoted as 1° alkanol. It's general formula is $-CH_2OH$.

Eg. ~~methanol~~ ethanol (CH_3CH_2OH), butanol ($CH_3CH_2CH_2CH_2OH$)

CH_2

ii) Secondary alkanols: It is that which the carbon with one -OH group attached is joined directly to two alkyl groups which may be the same or different. It can also be denoted as 2° alkanol.

Its general formula is $-CHROH$

E.g butan-2-ol

$$CH_3-\overset{OH}{\overset{|}{C}H}-CH_2-CH_3$$

propan-2-ol

$$CH_3\overset{OH}{\overset{|}{C}H}CH_3$$

2) CH_3MgBr + $CH_3CH_2CH_2CH_2\overset{O}{\overset{\|}{C}}CH_2CH_2CH_3$

(grignard reagent) (octan-4-one)

$$\rightarrow Mg(Br)Cl + CH_3CH_2CH_2CH_2-\overset{CH_3}{\overset{|}{\underset{OH}{\underset{|}{C}}}}-CH_2CH_2CH_3$$

(tertiary) alkanol

3. The starch containing materials by warming with melt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the melt.

$$\underset{\text{carbohydrate}}{2(C_6H_{10}O_5)_n} + nH_2O \xrightarrow[60^\circ C/\text{diastase}]{} \underset{\text{maltose}}{nC_{12}H_{22}O_{11}}$$

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

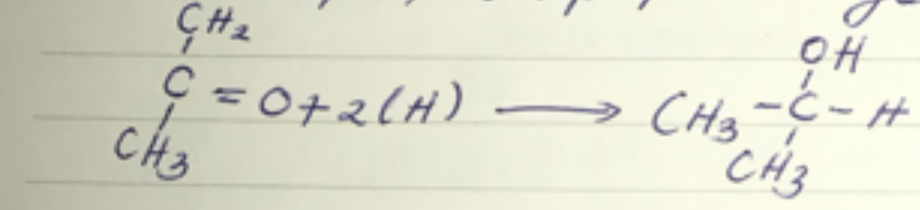
$$\underset{\text{maltose}}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow[15^\circ C/\text{maltase}]{} \underset{\text{glucose}}{2C_6H_{12}O_6}$$

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

$$\underset{\text{glucose}}{C_6H_{12}O_6} \xrightarrow[15^\circ C/\text{zymase}]{} \underset{\text{Ethanol}}{2CH_3CH_2OH} + 2CO_2$$

4) The Reduction of a Ketone

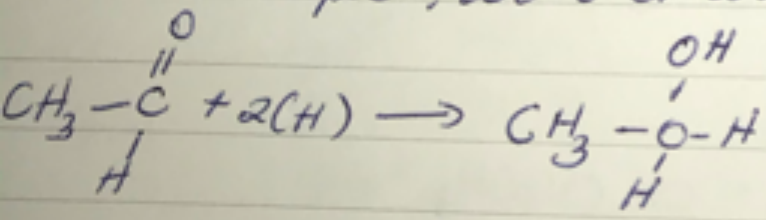
For example, with propanone you get propan-2-ol:



Product (Secondary alcohol)

The Reduction of an aldehyde

For example, with ethanal you get ethanol



Product (Primary alcohol)