1a) Classification based on number of hydroxyl group

b) Classification based on number of alkyl groups attached to the carbon carrying the hydroxyl group

a) (i) Monohydric alkanol

(ii) Dihydric alkanol

(iii) Polyhydric alkanol

(i) Monohydric alkanol: these are alkanols that have only one hydroxyl (functional) group in them. Eg Butanol

(ii) Dihydric alkanol: these are alkanols that have two hydroxyl (functional) groups only in them. Eg but-2,3-diol

(iii) Polyhydric alkanol: these are alkanols that have 3 and more hydroxyl (functional) groups in them. Eg Pent-2,3,4-triol.

b) (i) Primary alkanol (1°)

(ii) Secondary alkanol (2°)

(iii) Tetiary alkanol (3°)

(i) Primary alkanol (1°): these are alkanols that have only one alkyl-group attached to the carbon bearing the hydroxyl group. E.g ethanol

Secondary Alkanol: These are alkanols that have two alkyl group attached to the carbon bearing the hydroxyl functional group. E.g 2-methylpropan-2-ol

Tertiary Alkanol: These are alkanols that have three alkyl groups attached to the carbon bearing the hydroxyl functional group Eg 2 methylpropan-2-ol.

3 The fermentation process

Step 1: Break down starch to maltose using enzymes using enzyme diastase (Hydrolysis)

$$2(\underset{\text{starch}}{C_6H_{10}O_5}) + n(H_2O) \xrightarrow{\text{diastase}} n(\underset{\text{maltose}}{C_{12}H_{22}O_{11}})$$

Step 2: Convert maltose to glucose using enzyme maltase.

$$\underset{\text{maltose}}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow{\text{maltase}} 2\underset{\text{glucose}}{C_6H_{12}O_6}$$

Step 3: Convert glucose in ethanol using zymase

$$\underset{\text{glucose}}{C_6H_{12}O_6} \xrightarrow{\text{zymase}} \underset{\text{Ethanol}}{C_2H_5OH} + 2\underset{\text{Carbon(IV)oxide}}{CO_2}$$

4) Reduction of Propanone

C) Reduction of propanal

D) Reduction of Propanone

Using $NaBH_4$ in methanol (CH_3OH)

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PHARMACY

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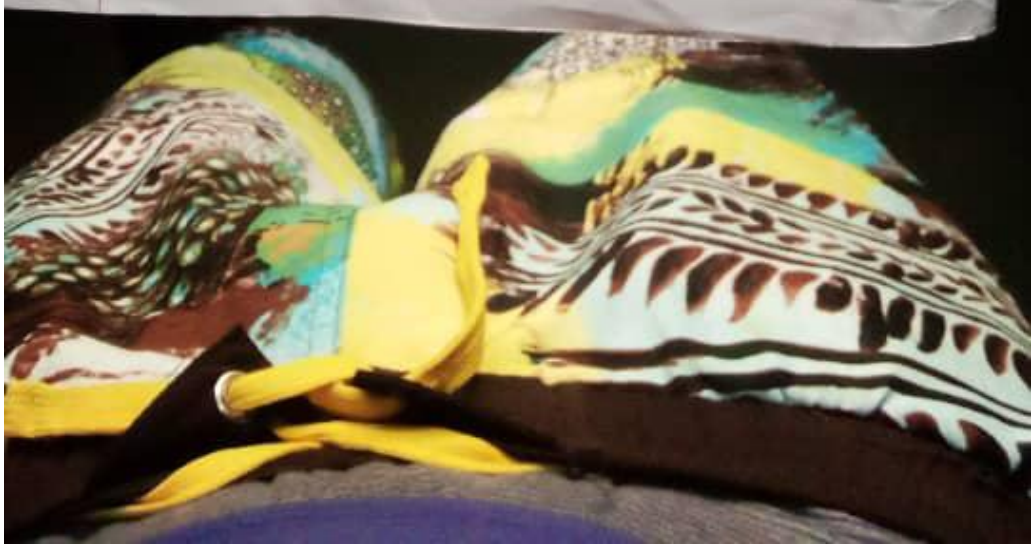

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Tertiary Alkanol: these are alkanols that have three alkyl groups attached to the carbon bearing the hydroxyl functional group e.g 2 methyl propan-2-ol.

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starch maltose

Step 2: Convert maltose to glucose using enzyme maltase

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow{\text{maltase}} 2C_6H_{12}O_6$$

maltose glucose

Step 3: Convert glucose in ethanol using zymase

$$C_6H_{12}O_6 \xrightarrow{\text{zymase}} C_2H_5OH + 2CO_2$$

glucose ethanol carbon(IV)oxide

4) Reduction of Propanone

5) Reduction of propanal

6) Reduction of Propanone

Using $NaBH_4$ in methanol (CH_3OH)