

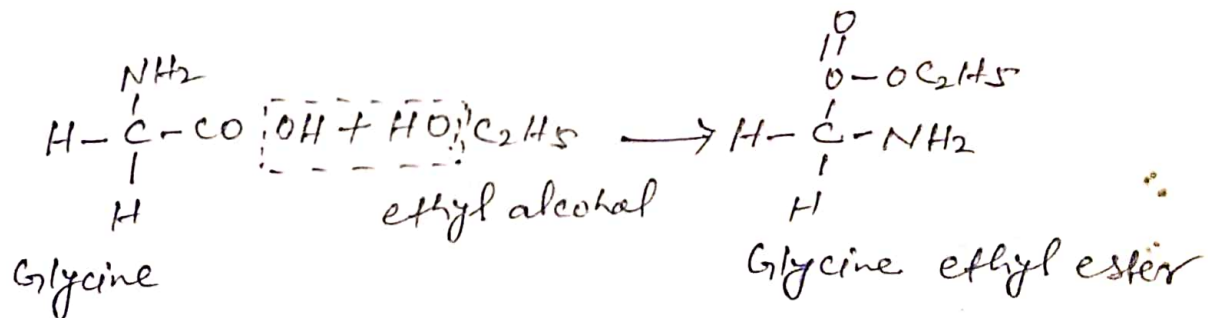
22/4/21 DTH (2001 H)

Acid-base properties of Amino acids

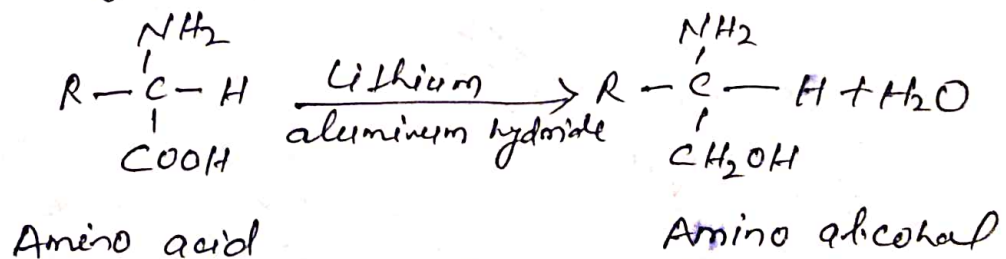
Amino acids are amphoteric in nature due to the presence of both amino as well as carboxyl groups. The amino group (NH_2) is responsible for basic property while carboxyl group (COOH) is responsible for acidic property.

Acidic property due to Carboxylic ($-\text{COOH}$) group

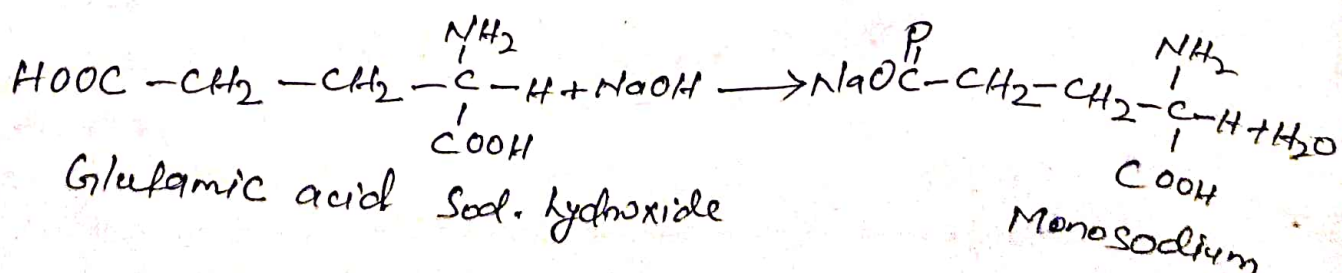
- (i) Formation of esters: - Carboxyl group of amino acids is esterified with alcohol.

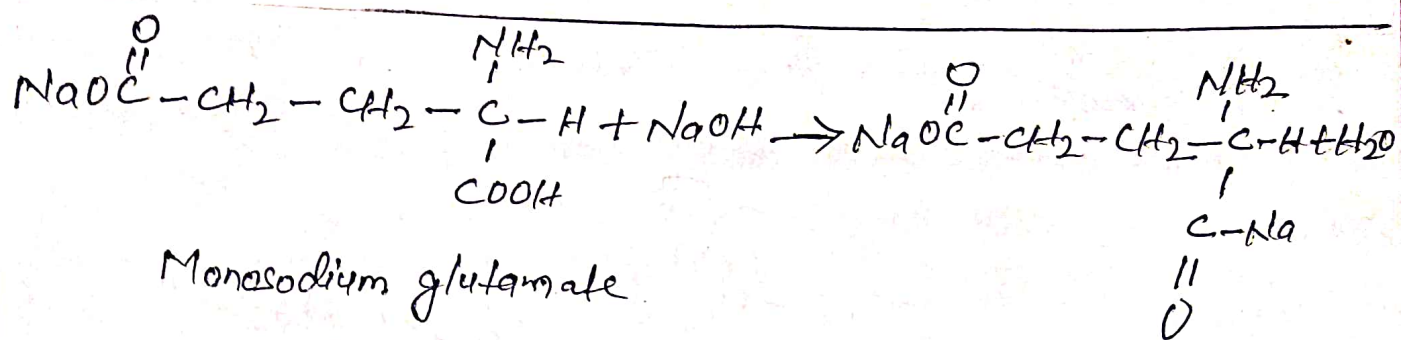


- (ii) Formation of amino alcohol: - In the presence of lithium aluminium hydride, amino acid is converted into amino alcohol.



- (iii) Formation of Salts: - Amino acids react with alkalis to form salts.



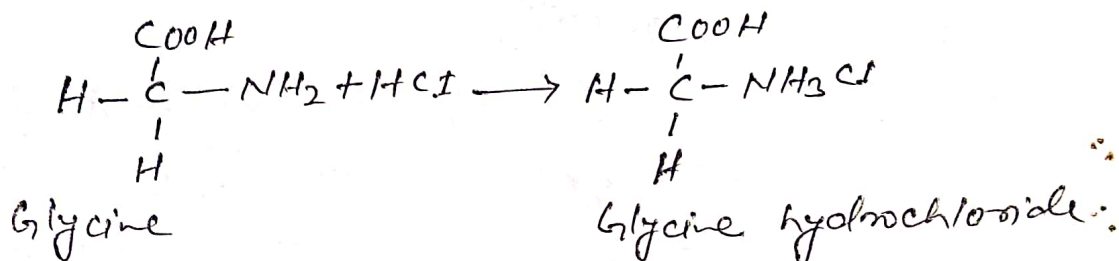


Monosodium glutamate

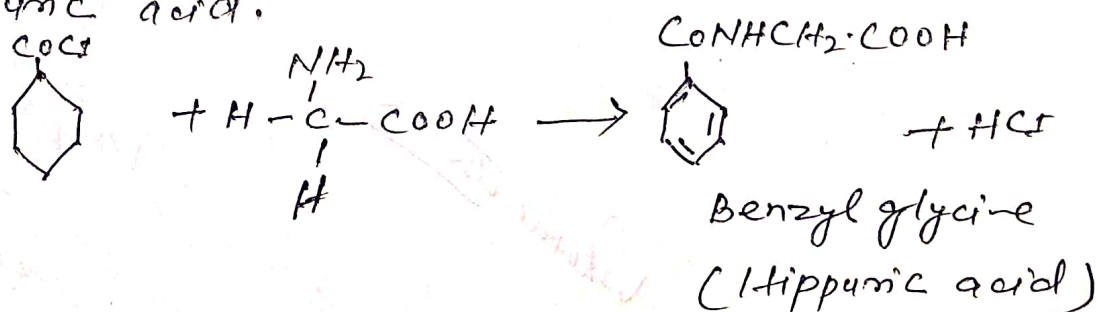
Disodium glutamate

Basic property due to amino ($-\text{NH}_2$) group

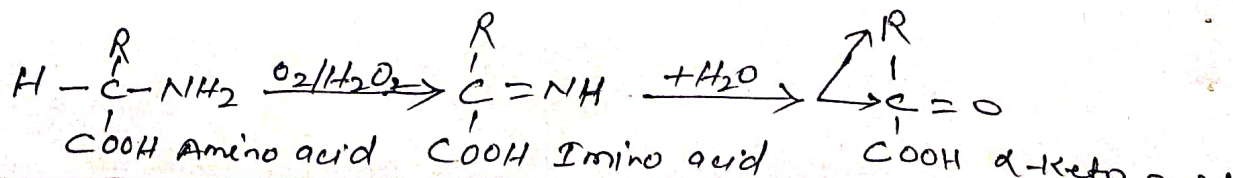
(i) Formation of Salts:- Amino group reacts with mineral acids like HCl to form salts.



(ii) Formation of acyl derivatives:- Amino group reacts with acyl anhydride or acyl halides such as benzoyl chloride and forms acyl amino acids like benzoyl glycine (hippuric acid).

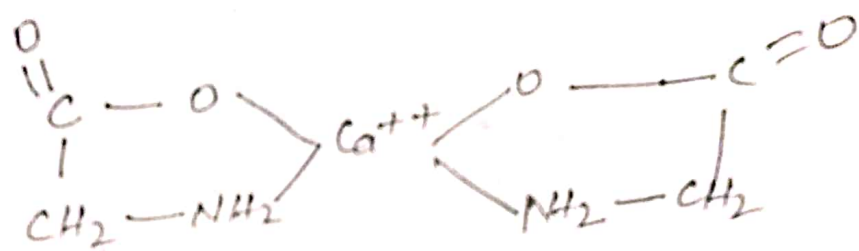


(iii) oxidation:- NH_2 group of amino acid is oxidised by potassium permanganate or H_2O_2 leading to the conversion of amino acid into amino acid which reacts with water to form NH_3 and α -keto acid.



Amphoteric property due to both NH_2 and COOH groups

(1) Chelation :- Amino acids react with certain heavy metal ions like Cu^{++} , Co^{++} , Mn^{++} and Ca^{++} . This reaction leads to the formation of coordination complexes



Calcium diglycinate