Carbohydrates

D. B. college Jaynagar, B.Sc.(II) Hons
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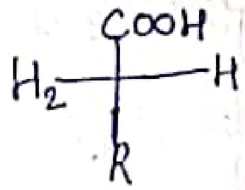
Natural Amino acids:



Name of the amino acid	characteristic feature of side chain. R	Three letter symbol	one letter of code
1. Glycine	H	Gly	G
2. Alanine	$-CH$	Ala	A
3. Valine*	$(H_3C)_2CH-$	Val	V
4. Leucine*	$(H_3C)_2CH-CH_2-$	Leu	L
5. Isoleucine*	$H_3C-CH-CH-$ CH_3	Ile	I
6. Arginine*	$HN=C-NH-(CH_2)_3-$ NH_2	Arg	R
7. Lycine*	$H_2N-(CH_2)_4-$	Lys	K
8. Glutamic acid	$HOOC-CH_2-CH_2-$	Glu	E
9. Aspartic acid	$HOOC-CH_2-$	ASP	D
10. Glutamine	$H_2N-\overset{O}{\overset{\|}{C}}-CH_2-CH_2-$	Gln	Q
11. Asparagine	$H_2N-\overset{O}{\overset{\|}{C}}-CH_2-$	Asn	N
12. Threonine*	$H_3C-CHOH-$	Thr	T

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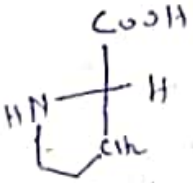
13. Serine	$HO-CH_2-$	Ser	S
14. Cysteine	$HS-CH_2-$	Cys	C
15. Methionine*	$H_3C-S-CH_2-CH_2-$	Met	M
16. Phenylalanine*	$C_6H_5-CH_2-$	Phe	F
17. Tyrosine	(P) $HO-C_6H_4-CH_2-$	Tyr	Y
18. Tryptophan*		Trp	W
19. Histidine*		His	H
20. Proline		Pro	P

* essential amino acid, a = entire structure

Classification of Amino Acid:

Amino acids are classified as acidic, basic or neutral depending upon the relative number of amino and carboxyl groups in their molecule.

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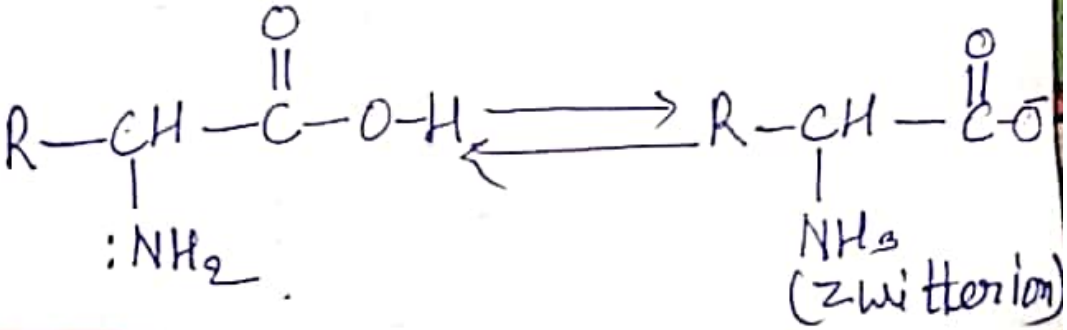
The amino acids, which can be synthesised in the body, are known as ~~the other hand, those which cannot be synthesised in the body and are known as essential amino acids.~~ non-essential amino acids. on the other hand, those which cannot be synthesised in the body and must be obtained through diet, are known as essential amino acids.

Amino acids are usually colourless, crystalline solids. These are water-soluble, high melting solids and behave like salts rather than simple amines or carboxylic acids. The behaviour is due to the presence of both acidic (carboxyl group) and basic (amino group) groups in the same molecule.



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In aqueous solution, the carboxyl group can lose a proton and amino group can accept a proton, giving rise to a dipolar ion known as zwitter ion. This is neutral but contains both positive and negative charge.

In zwitter ionic form, amino acids show amphoteric behaviour as they react both with acids and bases.

Except glycine, all other naturally occurring α-amino acids are optically active, since the α-carbon atom is asymmetric. These exist both in 'D' and 'L' forms. Most naturally occurring amino acids have L-configuration. L-Aminoacids are represented by writing the $-NH_2$ group on left side.

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