Amino acids with non-Polar R groups.

aliphatic (6)

1. Glycine — Gly / G — Simplest side chain
2. Alanine — Ala / A — hydrocarbon side chain.
3. Valine — Val / V — hydro carbon side chain
4. Leucine — Leu / L — hydrocarbon Side chain
5. Isoleucine — Ile / I — hydrocarbon side chain
6. Methonine — Met / M — thioether side chain (sulfur atom)

aromatic (2)

1. Phenylalanine — Phe / F — (phenyl moiety)
2. Tryptophan — Trp / W — indole group.

cyclic

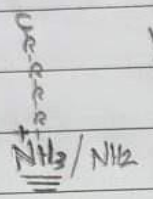
Proline — Pro / P (Pyrrolidine)

Amino acids with charge Polar R groups.

3 Positively charged (basic)

2 negative charge (acidic)

1. Lysine
Lys / K

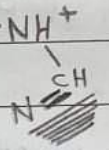


butyl ammonium. Side chain

2. Arginine
Arg / R

$C=NH_2^+$ guanidine group

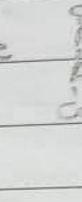
3. Histidine
His / H



imidazole. group.

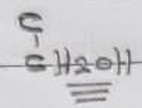
1. Aspartate
Asp / D

2. Glutamate
Glu / E



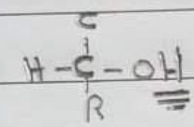
Amino acids with uncharged Polal R groups.

1 Serine
Ser / S



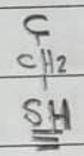
hydroxyl group (OH)

2 Threonine
Thr / T



hydroxyl group (OH)

3 Cystine
Cys / C

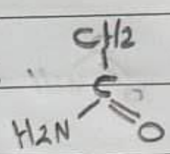


thiol group.
* form (disulfide bond)

4 Tyrosine
Tyr / Y

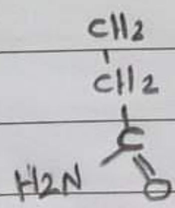
phenolic group.

5 Asparagine
Asn / N



amid asparatic acid

6 Glutamine
Gln / Q



amid glutamic acid.

Shahed Aref

Di sulfide bond:

* Covalent.
* Formed between the sulfhydryl group (SH) of 2 cysteine

Cysteine + cysteine

↓ oxidation

Product

Cystine

thiol grop. — R–SH ← Sulf hydral grop.