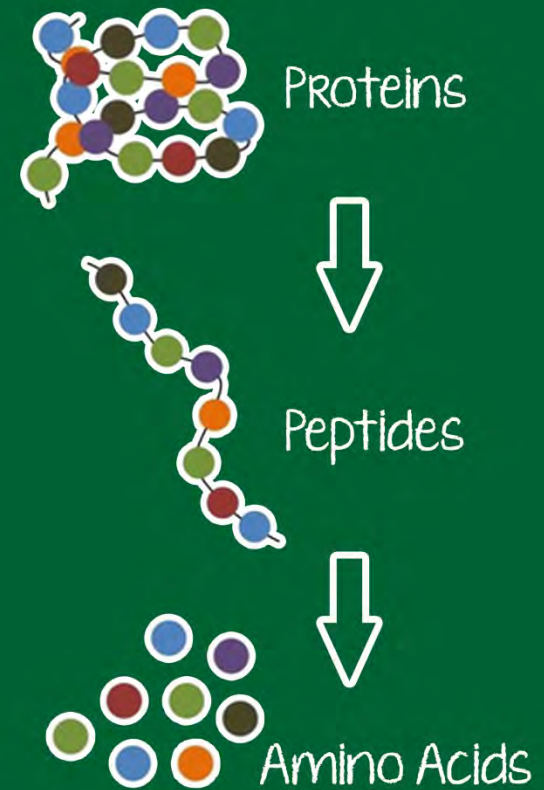


Proteins

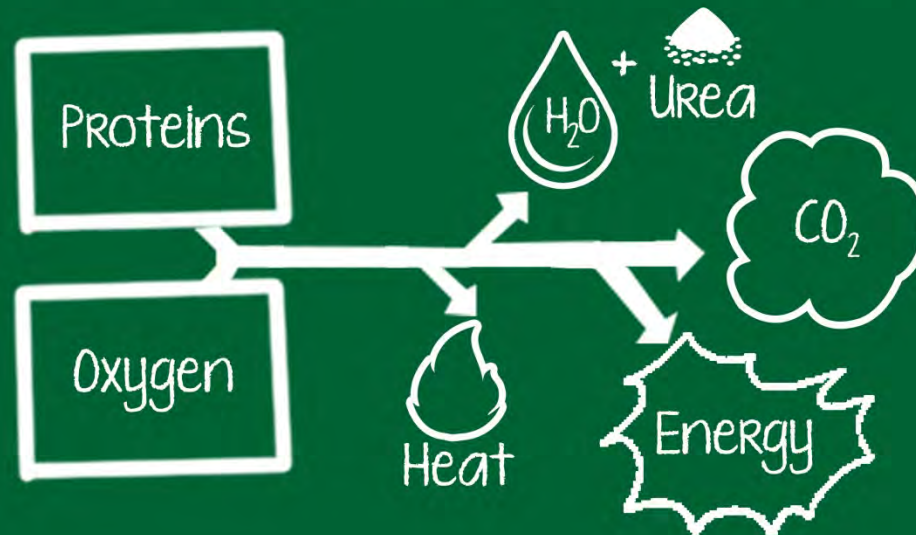


What are Proteins?

- Proteins are nitrogenous compounds that are the building blocks of our body.
- Nutrient Proteins : Yields Aminoacids on hydrolysis.
- Complex or Conjugated Protein : Combination of Protein and non-protein substance.
Eg., DNA, RNA, Lipoproteins, enzymes.
- 25 to 35% of energy to be met through Proteins.



Proteins Facts



Energy	Heat	Respiratory Quotient
4 kCal / g	30%	0.8

Nutrient Proteins

Quality of Proteins depends on the source and type of treatment.

Protein Rating Methods

Protein Efficiency Ratio

$$\text{PER} = \frac{\text{Wt. Gain (g)}}{\text{Protein Intake (g)}}$$

Biological Value

$$\text{BV} = \frac{\text{Nitrogen Retained (g)} \times 100}{\text{Nitrogen Absorbed (g)}}$$

PDCAAS

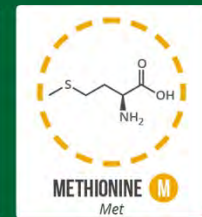
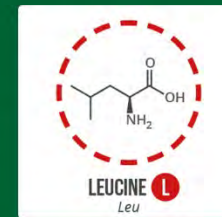
The ability of food protein to meet human needs accessed by comparing the amino acid content of the digested food protein to the needs of 2 - 5 year child which represent the most demanding requirement

Protein Source	Rating Methods			
	B.V.	P.E.R.	N.P.U.	PDCAAS
Whey Protein	104	3.6	92	1.0
Whole Egg	100	3.8	94	1.0
Beef	80	2.0	73	0.92
Casein (milk)	77	2.9	76	1.0
Soy	74	2.1	61	0.99
Rice	59	2.0	57	0.26
Beans	49	1.4	39	0.68

Components of Proteins

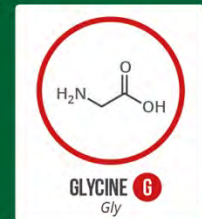
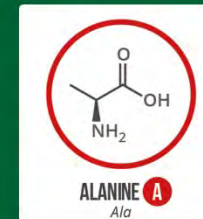
Essential amino acids

cannot be synthesized in body and to be supplied through diet.



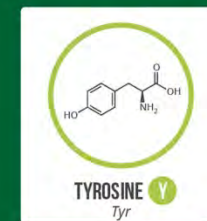
Non Essential Amino Acids

can be synthesized in the body.



Conditionally Essential Amino Acids

become essential in certain clinical states.
Eg. Taurine, Tyrosine.



Amino Acids

Essential Amino Acids

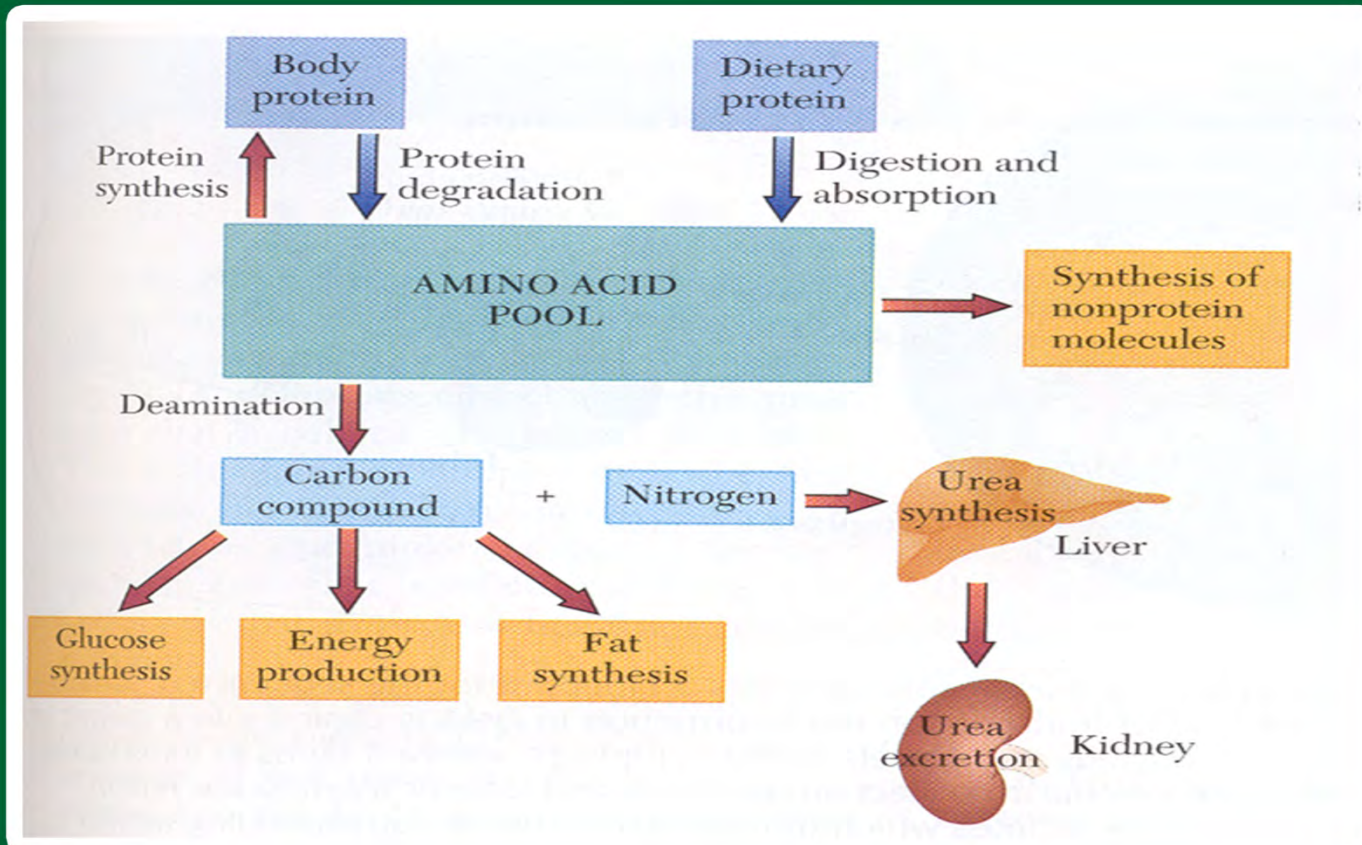
Phenylalanine
Valine
Tryptophan
Threonine
Isoleucine
Methionine
Histidine
Leucine
Lysine

Non Essential Amino Acids

Arginine
Alanine
Asparagine
Aspartate
Cysteine
Glutamate
Glutamine
Glycine
Proline

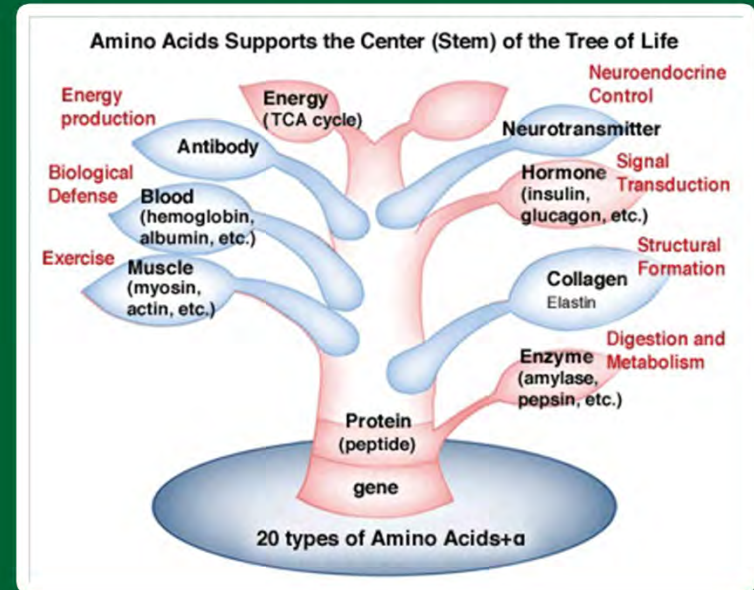
Serine
Tyrosine

Protein Cycle in Body



Functions of Amino Acids

- Gives structure and form to human body. Collagen and elastin forms matrix for bone and ligament.
- Maintenance of body tissue.
- Production of enzymes, hormones and body fluids.
- Production of antibodies.
- Component of lipo-protein. Helps in transport of Triglycerides, Cholesterol, Fat Soluble Vitamins.



Summary

- Proteins are the building blocks of our body
- Made up of Amino acids
- RDA- 0.8-1.0g/ Kg of body weight.
- Intake $>2g / kg$ = Increase in renal solute load.