



SNS COLLEGE OF NURSING
Saravanampatti (po), Coimbatore.

DEPARTMENT OF NURSING
COURSE NAME : BSC (NURSING) I YEAR
SUBJECT : NUTRITION
UNIT: II: FAT AND PROTEIN
TOPIC : PROTEIN



INTRODUCTION



Protein came from a greek word “Prota” meaning “of the first rank” or “of primary importance”.

These molecules were first described and named by the swedish chemist Jons Jakob Berzelius in 1838.



DEFINITION



Proteins may be defined as the high molecular weight mixed polymers of alpha amino acids joined together with peptide linkage.



CLASSIFICATION



- A) Based on physical properties and chemical composition
- Simple: It is simple. Made of amino acids units joined by peptide bond.
 - Conjugated: composed of simple proteins combined with a non- protein substance.
 - Derived : not naturally occurring proteins. Obtained from simple proteins by the action of enzymes and chemical agents.



CLASSIFICATION



B) Based on Conformation and solubility

- Fibrous protein : Tough and insoluble in ordinary solvents. Collagen of tendons and bone matrix composed of this.
- Globular protein : Soluble in body fluids such as Haemoglobin and insulin.



CLASSIFICATION



C) Based on nutritional properties

- Biologically complete proteins which contains enough of the indispensable amino acids to maintain body tissue and promote a normal rate of growth.
- Biologically incomplete protein- incapable of replacing or building new tissue and hence cannot support life.

Protein requirements depends on

- 1) Age
- 2) Gender and growth
- 3) Physiological variables
- 4) Illness
- 5) Worm infestations



RDA



The ICMR in 2010 recommended 1.0g protein/kg body weight for an Indian adult, assuming a NPU of 65 for the dietary proteins.



Sources of Protein



ANIMAL SOURCES:

Protein of animal origin are found in Milk, Meat, Fish, Eggs and Cheese. Egg proteins considered to be the best among food proteins, known as “ Reference protein”.



Sources of Protein



VEGETABLE SOURCES:

Vegetable proteins are found in pulses/ legumes, cereals, beans and nut, oil etc..



DIGESTION OF PROTEIN



- ✓ Digestion of proteins starts in stomach
- ✓ When proteins enters the stomach, it stimulates the secretion of gastrin hormone. This gastrin hormone, in turn stimulates the release of gastric juice which contains, HCL(cause degeneration of proteins and convert proteins which are easily digested), Pepsinogen(activated by HCL by auto activation), and in Infants Renin(It is milk clotting enzyme and it converts casein of milk into paracaseinate).



DIGESTION OF PROTEIN



ABSORPTION IN PANCREASE

- It is an endopeptidases and secreted in an inactive form called trypsinogen. It is activated by entero-kinase.
- It hydrolyse central peptide bond in which the carboxylic group belongs to basic amino acid



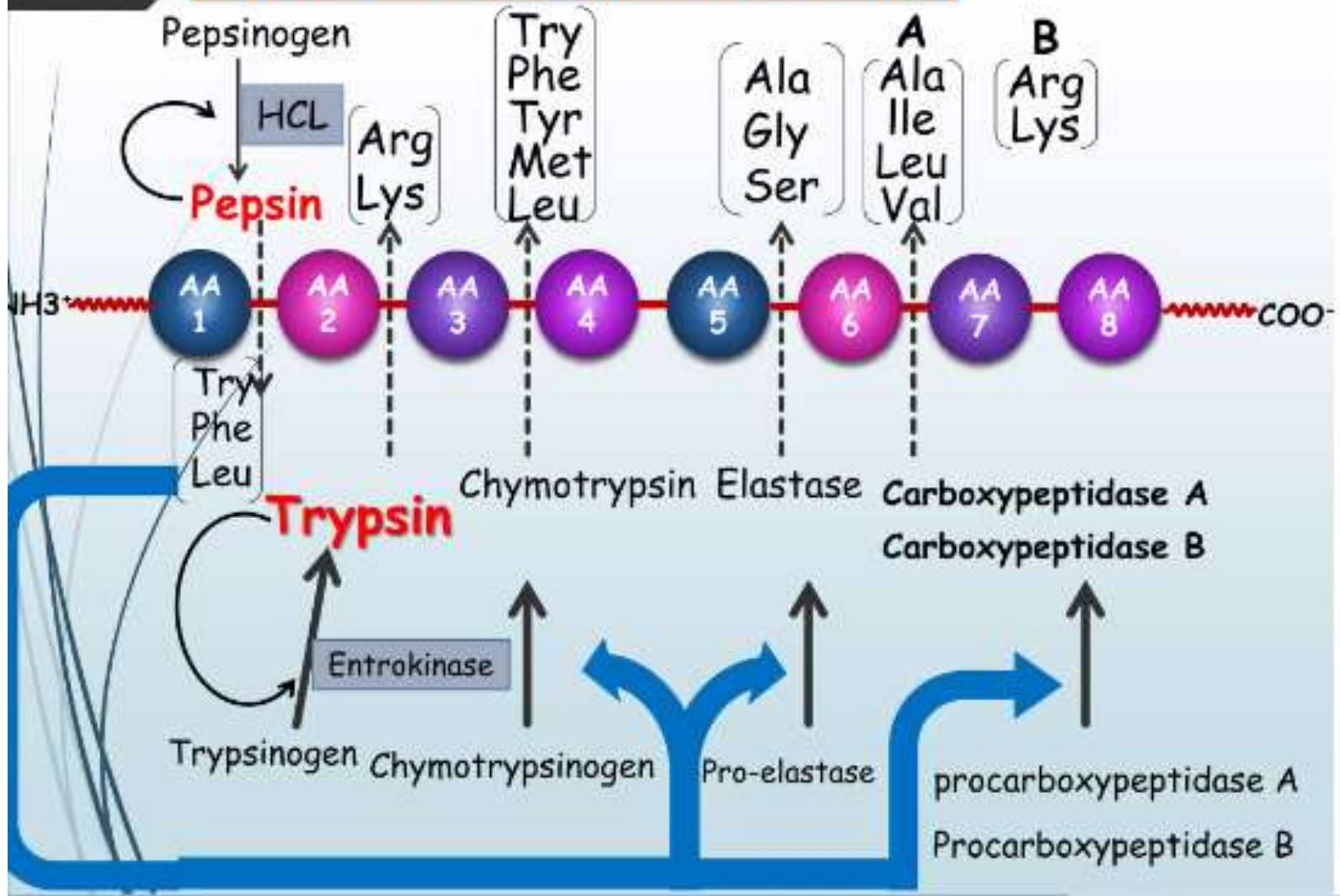
DIGESTION OF PROTEIN



DIGESTION IN INTESTINES

- Aminopeptidase – it is an exopeptidases. It acts on the terminal peptide bond at the amino terminal of the peptide chain.
- Dipeptidases – It acts on dipeptide. It releases two amino acids.
- Tripeptidase – It act on Tripeptide. It releases the one amino acid and dipeptide.

Overview of Digestion of proteins



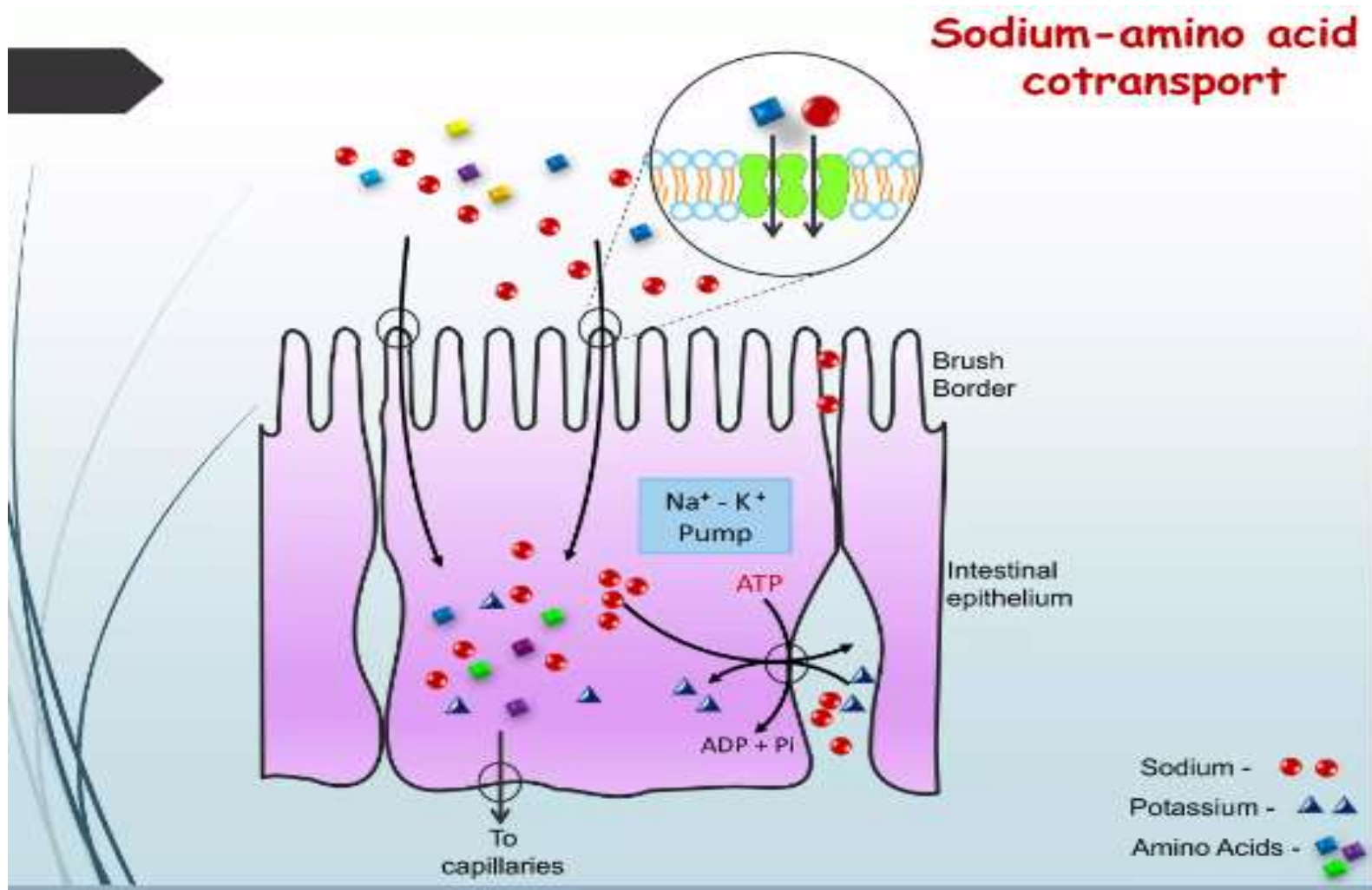


ABSORPTION



- Absorption of most of Aminoacids by active transport mechanism.
- By Na⁺ dependent active transport system (Na⁺ amino acids cotransport)
- An energy requiring process.

ABSORPTION





METABOLISM



Protein metabolised by 3 process

1. Catabolism in the liver break down and urea formation
2. Formation of tissue protein
3. Formation of other nitrogenous substance.



ASSESSMENT



- Explain classification of protein.
- Describe sources of protein.
- Write in detail about digestion and absorption of protein.





REFERENCE

- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3rd edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2nd edition, published by Wolters Kluwer.
- <https://www.slideshare.net/aiswarya1995/balanced-diet-57863742>

