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18/MHS05/004

PHYSIOLOGY DEPARTMENT

MEDICAL BIOCHEMISTRY III

BIOLOGICAL VALUE

1. Biological value, BV, is a measure of the portion of absorbed protein from a food which becomes incorporated into the proteins of the organism's body. It focuses on how efficient digested protein can be used in protein synthesis in the cells of the organism. BV assumes protein is the only source of nitrogen and measures the proportion of this nitrogen absorbed by the body which is then excreted.

VARIOUS METHODS OF ASSESSING PROTEIN QUALITIES

2.
 - i. Biological value
 - ii. Net protein utilization
 - iii. Amino acid score
 - iv. Protein efficiency ratio (PER)
 - v. Net protein ration (NPR)

i. biological value: is the percentage of absorbed nitrogen retained in the boby and a complete evaluation of the dietary protein includes measurement of the biological value and digestibility.

$$\text{Digestibility} = \frac{I-(F-F_0)}{I} \times 100$$

$$\text{Biological value} = \frac{I-(F-F_0)-(U-U_0)}{I-(F-F_0)} \times 100$$

I= Nitrogen intake of test protein

F= fecal nitrogen

F₀= fecal nitrogen on nitrogen-free diet (metabolic N)

U=urinary nitrogen

U_0 =urinary nitrogen on nitrogen-free diet (Endogenous N)

ii. Net protein utilization: like BV, NPU estimates nitrogen retention but in this case by determining the difference between the body nitrogen content of animals fed no protein and test protein.

iii. Amino acid score: a protein which contained every essential amino acid in sufficient amounts to meet requirements without any excess, then it should be possible to compute the nutritive value of a protein by calculating the deficit of each essential amino acid in the test protein from the amount in the 'ideal protein'.

iv. protein efficiency ratio (PER): in an attempt to compensate for the difference in food intake, the calculated gain in weight per gram of protein eaten and is called PER.

v. Net protein ration (NPR): is the overall difference in gain (gain in weight of the test group plus loss in weight of the protein-free group) divided by the protein eaten.