Nutritional indices of protein

> Whipple introduce plasmapheresis are as means to assess the nutritional value of protein.

>Modern way to assess the nutritional value of protein as the only source of nitrogen to an animal and assess the weight gain .

Following Indicates are used to assess the nutritional value of protein.

1:-Bilogical value of protein
2:-Net protein utilization
3:-Net dietery protein
4:-Protein efficiency ration

Biological value (BV) of protein

It is the radio between the amount of nitrogen retained and nitrogen absorbed during a special interval.

$$BV = \frac{\text{Retain nitrogen} \times 100}{\text{Absorbed nitrogen}}$$

Suppose 127mg of a particular protein was consumed by a rat in a day and 4mg is recoved in feces and 24mg is seen in urine. Then
Amount invested= 127mg
Amount absorbed= 127-4 = 123mg
Amount retained = 99/123×100= 81%

>Net protein utilization (NPU)

NPU= retained nitrogen/intake of nitrogen×100 in the above example.

NPU of protein "A"=99/127×100= 78%

and for protein "B" it is 4.5/100×100=4.5%

Thus NPU is a better index than BV to denote nutritional quality and availability of protein (table 36.12)

>Net dietary protein value (NDPV)

This will assess both quality and quality of the protein in diets.

NDPV= Intake of N×6.25× NPU

> Protein Efficiency Ratio or PER

It is the weight gain per gram of protein take. The essential amino acid content can also be expressed in terms of chemical score (mg of amino acid per gram of protein). By comparing the chemical score of different proteins with egg protein, the essential amino acid content can be assessed.

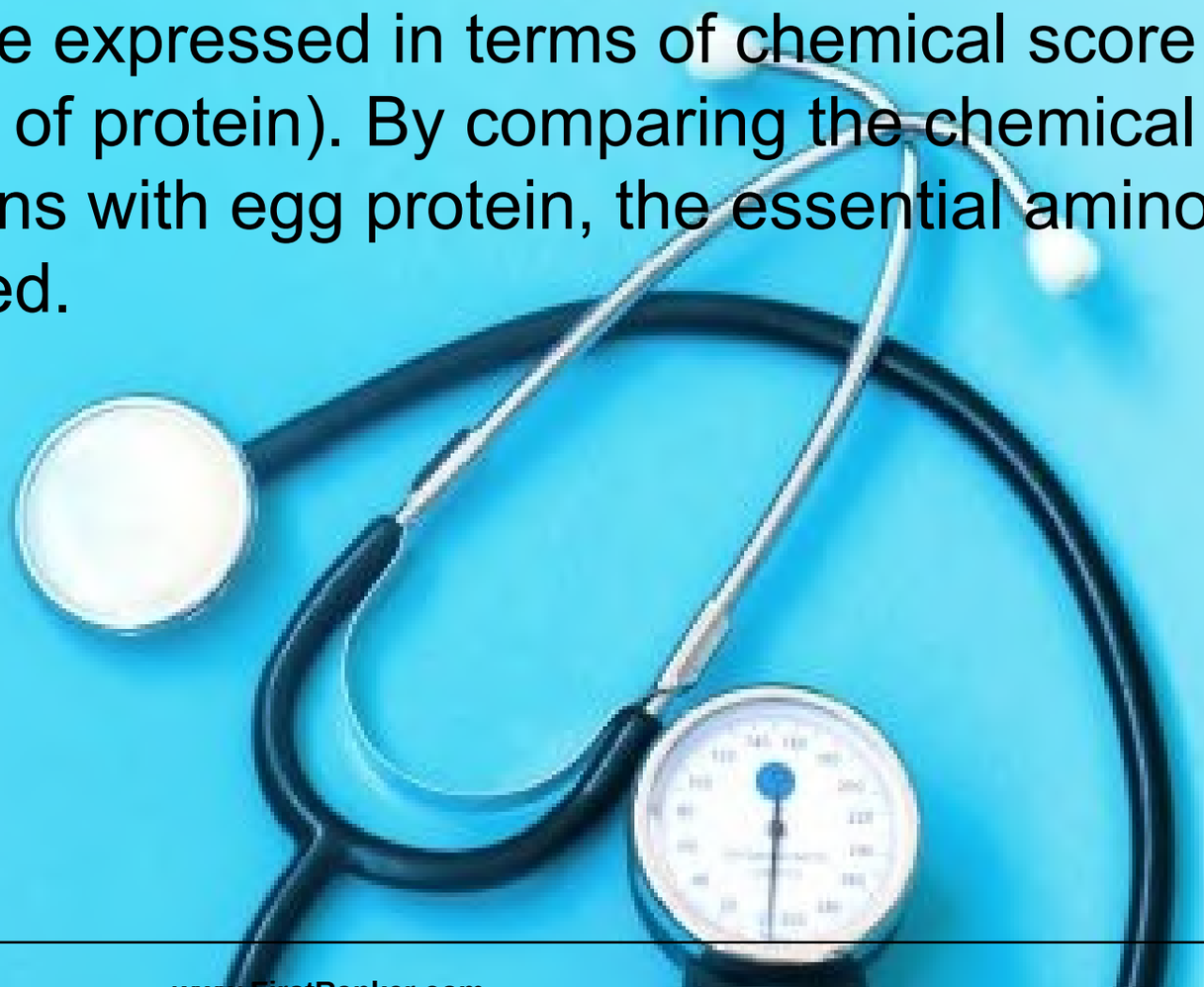

Table 36.12. Nutritive value of proteins
(BV = biological value; NPU = net protein utilization; PER = protein efficiency ratio)

Source of protein	BV	NPU	PER	Chemical score
Egg	90	91	4.5	100
Milk	84	75	3.0	65
Meat	80	76	2.8	70
Fish	85	72	3.0	60
Rice	64	57	2.0	60
Wheat	58	47	1.7	42
Bengal gram	58	47	1.7	44
Ground nut	54	45	1.7	44
Soyabean	64	54	2.0	57
Gelatin	-	-	0	0
Zein	-	-	0	0

THANK YOU

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