

Concept of Biological value, Protein  
Efficiency ratio, Net protein utilization

# Protein Efficiency Ratio

**Protein Efficiency Ratio [PER]:** It is measure of weight gain/unit protein fed

$$\text{PER} = \frac{\text{weight gain (g)}}{\text{Protein fed on dry on dry wt. basis(g)}}$$

# Net protein utilization

- It is measure of the protein gain during an experimental period/ unit protein absorbed by the fish

$$\text{NPU} = (\text{Final body protein} - \text{Initial body protein}) / \text{Total protein fed} \times 100$$

# Biological value

- It has been defined as the "percentage of absorbed nitrogen retained in the body" and a complete evaluation of the dietary protein includes measurement of the Biological Value and the Digestibility.

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

where

I = Nitrogen intake of test protein

F = Faecal nitrogen

F<sub>0</sub> = Faecal nitrogen on nitrogen-free diet (Metabolic N)

U = Urinary nitrogen

U<sub>0</sub> = Urinary nitrogen on nitrogen-free diet (Endogenous N)