What is the measure of the amount of nutrients going in and those coming out?

- Digestibility

Name some ways Digestibility of measured:

1) Animals housed in stalls or crates
2) Feed intake measured
3) Feces & urine collected
4) Analysis conducted on feed and feces to determine % digestibility

What is the Digestion Coefficient?

$$\frac{\text{(Weight of feed x \% Nutrients in feed) - (weight of feces x \% nutrients in feces)}}{\text{Weight of feed x \% nutrients in feed}}$$

(Measure the difference between what is consumed and what is excreted)

Measure the digestibility:

1) Pig consumes 400 g feed with 20% crude protein
   Pig excreted 200 g feces with 15% crude protein
   CP digestibility =

$$\frac{(400 \times 20\%) - (200 \times 15\%)}{400 \times 20\%}$$

$$\frac{80 - 30}{80} = 62.5\% \text{ Digestibility of Crude protein}$$

Example 2: Sheep Digestibility

A sheep consumes 300 g of feed containing 25% crude protein (CP).
The sheep excretes 100 g of feces containing 12% crude protein.

Step 1: CP intake

300×25%=75 g300 \times 25\% = 75 \, g300×25%=75g

Step 2: CP excreted

100×12%=12 g100 \times 12\% = 12 \, g100×12%=12g

Step 3: CP digestibility

(75−12)75×100=6375×100\frac{(75 - 12)}{75} \times 100 = \frac{63}{75} \times 10075(75−12)×100=7563×100

Answer:

84% Digestibility of Crude Protein84\% \, \text{Digestibility of Crude Protein}84%Digestibility of Crude Protein

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Example 3: Goat Digestibility

A goat consumes 600 g of feed with 16% crude protein (CP).
The goat excretes 300 g of feces with 8% crude protein.

Step 1: CP intake

600×16%=96 g600 \times 16\% = 96 \, g600×16%=96g

Step 2: CP excreted

300×8%=24 g300 \times 8\% = 24 \, g300×8%=24g

Step 3: CP digestibility

(96−24)96×100=7296×100\frac{(96 - 24)}{96} \times 100 = \frac{72}{96} \times 10096(96−24)×100=9672×100

Answer:

75% Digestibility of Crude Protein75\% \, \text{Digestibility of Crude Protein}75%Digestibility of Crude Protein

Example Problem: Measure the digestibility

A cow consumes **500 g of feed** containing **18% crude protein (CP)**.
The cow excretes **250 g of feces** containing **10% crude protein**.
What is the CP digestibility?

Step 1: Calculate CP intake

$$500 \times 18\% = 90 \, g$$

Step 2: Calculate CP excreted

$$250 \times 10\% = 25 \, g$$

Step 3: Apply digestibility formula

$$\frac{(CP \, intake - CP \, excreted)}{CP \, intake} \times 100$$
$$CP intake (CP intake − CP excreted) × 100$$
$$\frac{(90 - 25)}{90} \times 100 = \frac{65}{90} \times 100$$
$$90 (90 − 25) × 100 = 90 65 × 100$$

Answer:

$$72.2\% \, \text{Digestibility of Crude Protein}$$
72.2% Digestibility of Crude Protein