Introduction of Animal Nutrition

Science of Animal nutrition:

It is study a chemical changes through which raw materials in feed are transformed into other materials suitable for maintaining the cells of the animal's body and for their continued performance of their various functions naturally. Animal nutrition is linked to a group of other sciences such as biochemistry, physiology, microbiology, genetics.

Factors that led to increased interest in animal nutrition:

1- Development of domestic animals and the diets provided to them and increasing their production yield:

This development is due to the improvement in the quality of modern diets provided to animals and to the change in genetic composition, which led to the appearance of new and improved breeds**.**

2-The effect of different manufacturing processes on the nutritional value of feed materials:

The manufacturing and preparation processes to which some feed materials are subjected affect their nutritional value. For example, hay dried in the sun is rich in vitamin D but poor in carotene, while artificially dried hay is poor in vitamin D and rich in carotene**.**

3- The appearance of changes in the chemical composition of forage plants that may lead to changes in their value:

The breeding and hybridization processes carried out on fodder plants affect the nutritional content of these plants. The percentage of protein

in corn with natural free fertilization was about (9-10%), while the percentage in hybrid corn was (7-8%).

4- The appearance of new feed materials:

Many new feed materials have recently appeared that fill the animal's need for the necessary nutritional components that its diet lacks: Examples of these materials include bone meal, meat meal, and fish meal. Vitamin B12 concentrates

5-The appearance of feed additives:

New chemicals have been discovered that increase the growth rate and production of animals. They are called feed additives, such as hormone-like substances.

Unit of measurement for food energy

Calories:

A. **Small calorie**: the amount of energy needed to raise the temperature of one (1) gram of water by one degree Celsius (from 14.5°C - 15.5°C) under standard pressure (760 mm Hg).

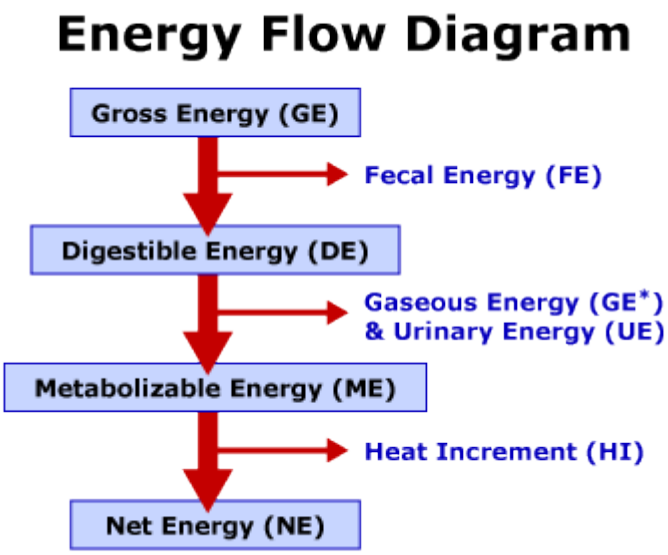
B. **Large calorie :** is the amount of energy needed to raise the temperature of 1000 g of water is one degree Celsius (from 14.5°C – 15.5°C) at standard pressure (760 mm Hg).

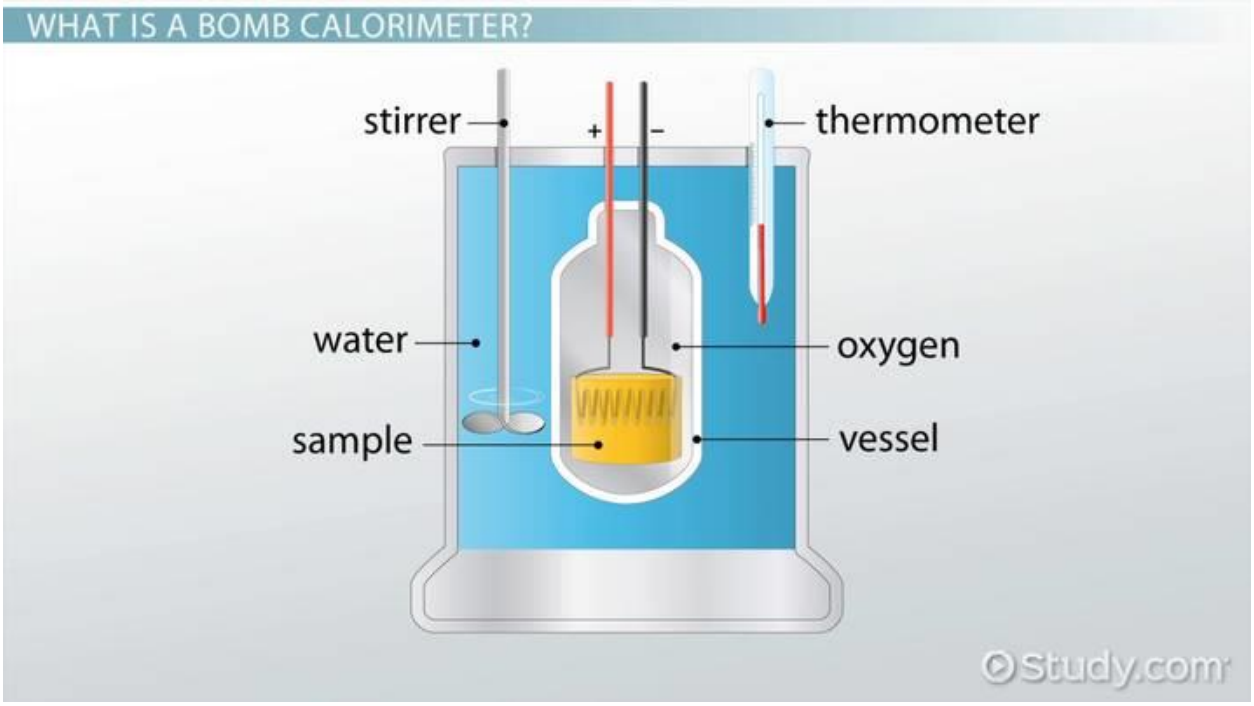
1 kcal = 1000 cal

1 megacal = **1000** kcal

1 calorie = **4.184** joules

1 joule = **0.239** calories


Energy Flow Diagram
Gross Energy (GE)
Fecal Energy (FE)
Digestible Energy (DE)
Gaseous Energy (GE*)
& Urinary Energy (UE)
Metabolizable Energy (ME)
Heat Increment (HI)
Net Energy (NE)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stirrer
+
–
thermometer
water
oxygen
sample
vessel
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