DW Nº 03: DETERMINATION OF THE NITROGEN VALUE OF FOODS

I. THE EVALUATION SYSTEMS OF THE DIETARY NITROGEN

1. the classic units of measurement of nitrogenous substances:

1.1. Total nitrogenous matter (the MAT system):

As with energy, unitssMeasurement of nitrogenous matter (MA) is necessary to be able to quantify the needs of animals and the value of feed. Knowing that total nitrogenous matter includes: protein matter (proteins, polypeptides, etc.) and non-protein nitrogenous matter (amides, urea, ammonia salts, etc.), the unit of expression of nitrogenous matter is:

- The gram (after food analysis).

- *The percentage* (relative to dry matter).

Total nitrogenous matter is obtained by multiplying the organic nitrogen content of the feed (determined by the Kjeldahl method) by the coefficient 6.25 (100/16). In this way, it is assumed that all nitrogenous materials thus dosed continue to contain 16% nitrogen:

MAT = N Total x 6.25

1.2. Digestible nitrogenous matter (DNM) or the DNM system:

The nitrogen content of digestible (MAD) of a food is obtained by taking into account the apparent losses of nitrogenous matter in the feces:

MAD = Ingested MAT - Fecal MAT

CUD MA = Ingested MAT - Fecal MAT / Ingested MAT

1.3. Intestinal digestible proteins (INRA's PDI system):

The dietary intake and nitrogen requirements of ruminants are also expressed in grams of protein actually digestible in the small intestine (PDI), which are the sum of two fractions:

- small intestinal digestible dietary proteins (SIDFP)
- small intestinal digestible microbial proteins (SIMPs).

Each food is thus characterized by:

- a PDIA value
- two PDIM values
 - PDIME:PDIM value allowed by the fermentable energy content in the rumen, content proportional to the rate of *digestible organic matter* (MOD) (in this case the limiting factor is energy).
 - PDIMN:PDIM value allowed by the content of fermentable nitrogenous matter in the rumen (in this case, the limiting factor is nitrogen).

PDIE = PDIA + PDIME PDIN = PDIA + PDIMN