Prediction of protein digestibility by a multienzymatic method

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A good quality premium dry dog food is characterised by a high digestibility, especially for protein. Measurements of in vivo digestibility is time consuming and expensive. The aim of the present study was therefore to correlate in vivo and in vitro protein digestibility by linear regression in order to predict digestibility coefficients.

Material and Methods

In vivo digestibility of 15 complete dry premium dog foods and 2 ingredients (meat and caseinate) was assessed on 4 dogs by total collection of faeces. Each sample was also analysed 3 times *in vitro* by the multienzymatic method at constant pH described by Dufour-Etienne et al.(1992). Fat was removed from the sample when ether extract was higher than 10 % dry matter (DM). After milling, a sample containing 10 mg of nitrogen was mixed with 50 ml distilled water, heated at 37 °C and maintained at pH 8. A solution with 3 enzymes (trypsin, chymotrypsin, and peptidase) was added at T0. Finally, NaOH 0.1 N was added to maintain the pH=8. The volume of NaOH was measured at 2, 5 and 10 minutes. The volume of NaOH was correlated with *in vivo* digestibility coefficients.

Results

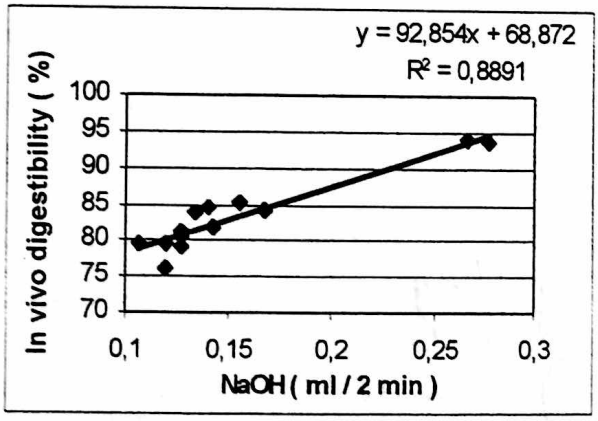
Table 1 presents the chemical composition of foods and ingredients. The protein contents ranged from 17 up to 92 % in DM.

Table 1. : DM content and composition of DM (%)

	DM	Protein	Ether extract	Fibre
Complete dog food	91.1-96.6	17.3-35.1	4.1-14.6	6.1-23.5
Meat	24.8	84.6	7.2	0
Caseinate	94.2	91.9	0	0

The measurements at 2 minutes were used to assess *in vitro* coefficients.
The relationship between *in vitro* and *in vivo* digestibility coefficients is illustrated in figure 1. The correlation coefficient was 0.94 (SE = 1.7).

Figure 1. : Linear regression



Conclusion and Discussion

The in vitro protein digestibility coefficients showed good agreement with the in vivo measurements. In vitro method is easy to perform and can be recommended to predict in vivo digestibility of complete dog food containing animal or vegetable proteins.

Dufour-Etienne F. et al.*, Rec. Méd. Vét., *1992, 168 , 789-796.

Categ : appliquée

Catecholamines in young horses – effects of different types of exercise and training

3 chevaux mâles

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Considering the role for energy metabolism plasma catecholamine changes were investigated in young horses during strenous of exercise and training.

Material and methods: Standardbred horses (n=7; age 2 years) were exercised on a highspeed treadmill by a standardized exercise test (SET; 6 steps a 5 min; velocity at start 5m/sec, increase in consecutive steps 1 m/sec). SET was followed by a lactate-guided training in two different types of exercise in an alternate order every