Evaluation of variation in nutrient availability in poultry feedstuffs

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What is this project about?

- A 5-year provincial project (poultry, swine, cattle).
- To evaluate inherent variability in nutrient availability in feedstuffs.
- Feedstuffs of importance in Alberta and Canada (Wheat, barley, peas, canola).
- To provide data on actual digestible nutrient contents of feedstuffs for diet formulation to meet animals' requirements more closely.

Components of the project

- *In vivo* digestibility.
- *In vitro* digestibility.
- NIRS (Near infra-red reflectance spectroscopy).
- Data generated in *in vivo* and *in vitro* digestibility methods are essential for constant updating of NIRS calibrations.

What has been completed?

- *In vivo* digestibility (animal studies).
- Time-consuming and expensive.
- Require frequent uses of animals.

What is currently in progress?

- Developing *in vitro* digestibility technique (s).
- To simulate digestive tract of the animals.
- To predict nutrient value of feedstuffs without conducting animal studies.
- Fast and inexpensive compared to using animals.

Shaking water bath mimicking body temperature & gut motility.

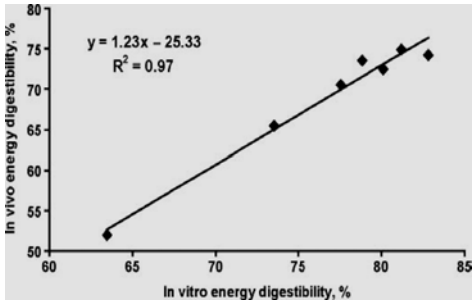
Flasks providing an environment for digestive processes to occur.

Filter papers containing non-digested residues.

The calorimeter measuring energy values of feedstuffs & *in vitro* residues.

What is next?

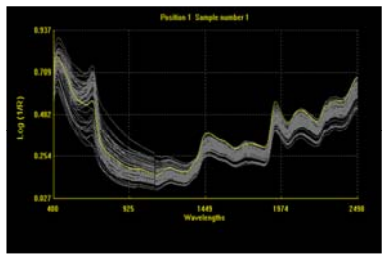
- *In vitro* results can not be relied upon unless validated with results of animal studies.
- This figure shows how closely related *in vitro* and *in vivo* digestibility results can be, depending on the *in vitro* technique.



Regmi et al. (2008)

- Validated *in vitro* results will be used to establish, maintain, and up-date NIRS calibrations.

Feedstuffs are scanned by a calibrated NIRS machine.



Spectra showing nutrient content of feedstuffs.

Where are we headed?

- Predicting nutrient availability of feedstuffs using NIRS (i.e. accurate and time-efficient).
- Providing a reliable basis for payment according to feedstuff quality and more accurate diet formulation to achieve optimal production performance.

References

- ACIDF Project - Feed Quality Evaluation/NIRS.
- Regmi, et al. 2008. J. Anim. Sci. 86:2619-2626.

Acknowledgments

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