

## **P.40.-In-house validation of the near infrared microscopy (NIRM) technique for the detection of animal meal in feedingstuffs**

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Since 1998, near infrared microscopy (NIRM) has been proposed by the Walloon Agricultural Research Centre (CRA-W) as an attractive alternative method for the detection and the quantification of meat and bone meal (MBM)<sup>1,2</sup>. A spectral library including more than 20 000 spectra of particles coming from allowed and forbidden (MBM, Poultry meal, Fish meal and various animal by-products) feed ingredients has been constructed. The samples were well characterised and have been analysed by the reference method (i.e. classical microscopy) and alternative methods (e.g. PCR) in order to check their composition and labelling. This spectral library is being used to construct discriminant equations to detect the presence of animal ingredients in feed ingredients and compound feeds.

In the framework of the STRATFEED project a complete NIRM protocol is being developed and validated to analyse the raw and the sediment fractions of the feedingstuffs<sup>3,4</sup>. The mathematical models generated were tested using several sets of samples including material coming from a wide range of origin. The first set included 21 samples of pure animal meals and compound feeds coming from the industry. The second set included a total of 24 blank (i.e. without MBM) compound feeds and 48 spiked samples adulterated at level ranging from 0.5 to 8 %. The third set was made of pure and spiked fishmeal samples. The analysis of the three sets demonstrated the powerful of the **NIRM method to detect the presence of animal meal in the raw material and in the sediment fraction** as well as the possibility to detect MBM in fishmeal.

The results of analyses of series of MBM free and spiked samples by NIRM and classical microscopy demonstrate that there is no difference between the outcome of both techniques. Moreover, the method has been successfully transferred to the Joint Research Centre (JRC) and was successfully applied to the homogeneity study of test material that was used in an intercomparison study for the detection of MBM in feed<sup>5</sup>.

### *References*

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<sup>2</sup>Baeten V., Michotte Renier A., Sinnaeve G. & Dardenne, P. (2001). - Analyse of feedingstuffs by near-infrared microscopy (NIRM): detection and quantification of meat and bone meal (MBM). In Proc. of the sixth International symposium on food authenticity and safety, 28–30 November 2000, Nantes, p. 1-11.

<sup>3</sup>Baeten V. & Dardenne P. (2001). - The contribution of near infrared spectroscopy to the fight against the mad cow epidemic. NIRS news, 12 (6), 12-13.

<sup>4</sup>Baeten V., Michotte Renier A., Sinnaeve G., Garrido Varo A. and Dardenne P. (2004). Analysis of the sediment fraction of feed by Near-Infrared Microscopy (NIRM). In Proc. of the 11<sup>th</sup> International Conference on Near-Infrared Spectroscopy (Garrido Varo A.), Cordoba, Spain, 6-11 April 2003.

<sup>5</sup>Gizzi G., Baeten V., Berben G., van Raamsdonk L. and von Holst C. Intercomparison study for the determination of processed animal proteins including meat and bone meal in animal feed, J AOAC International in print of processed animal proteins including meat and bone meal in animal feed, J AOAC International in print<sup>5</sup>

### **Keywords**

*Spectroscopy, microscopy, MBM, fish meal, feedingstuffs, validation*