

P.45.- Potential application of electronic nose in PAP detection in feedstuffs

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Electronic nose and olfactometry techniques have already proven to be a powerful modern analytical method in the food industry, in which they address many quality, safety and process challenges facing manufacturers. The aim of this study was to evaluate possible application of electronic nose in PAP detection and recognition in feed. For this purpose 6 reference feedstuffs (Agricultural Research Centre of Gembloux, Belgium, STRATFEED Project) were used. The base of the test samples was a compound feed for bovine fortified with PAP (meat and bone meal (MBM) and/or fish meal) at different concentrations. Samples schedule was the following: containing sample A, MBM 0.5%, sample B, MBM 0.5%+ Fish 5%, sample C, Fish 5%, sample D, blank (PAP absent), sample E, MBM 0.5%, sample F MBM 0.5% + Fish meal 5%. Each feed sample was tested in glass vials and the odour profile was determined by the 10 MOS (metal oxide semiconductor) sensors of the electronic nose (Airsense Analytics GmbH, Schwerin, Germany). Four replicates were taken for each sample. Ten different descriptors, representing each 10 sensors of electronic nose, were used to characterise the odour of each sample. Obtained data were analysed using the PRINCOMP and CLUSTER procedures of SAS (2001). In the present study electronic nose was able to discriminate the blank sample from all other samples containing PAP (MBM, fish meal or both). Samples containing the 0.5% of MBM and 5% of fish meal were identified, while samples containing higher fish meal (5%) associated with low MBM content (0.5%) were not discriminated from samples containing solely fish meal at the higher level (5%). This latter indicates that probably the high level fish meal, in samples containing both MBM and fish meal, tended to mask MBM odour. It was also evident that two odour sensors (sulphur-organic and broad-alcohol) were enough to explain 72.12% of total variability in odour pattern. In view of these results, it could be suggested that electronic nose and olfactometry techniques can provide an interesting approach for screening raw materials in feed industry, even though further studies using different and larger number of samples are needed.

Keywords

PAP determination, Electronic nose.