P.53.- Glyceroltriheptanoate as marker for category 1 and 2 animal by-products

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From 1 May 2003 products derived from category 1 and 2 animal by-products should be marked according to Regulation (EC) No. 1774/2002. To establish a suitable marking method for the traceability of MBM and fat, the price and non-removability are important and a reliable detection method with a low detection limit will be required.
Glyceroltriheptanoate (GTH) is suitable as a marker for category 1 and 2 animal by-products.
GTH is a clear transparant liquid with three C7-fatty acids esterified with glycerol. GTH is a safe product: it has applications in the food industry (e.g. marking of butter).
The C7 fatty acids of GTH are normally not found in nature, but heptanoic acid can also be found at low levels (10 - 20 mg/kg) in fat after bacterial deterioration. Therefore, an analytic technique is succesfully developed for analysis of the intact GTH instead of heptanoic acid after saponification.
GTH is extracted from the sample with light petroleum 40 - 70, after this the extract is purified by use of gas chromatrography with a silica column. The elution uses a mixture of light petroleum 40-70 and diethylether. The fraction with GTH is collected, concentrated and after silylation separated with a capillary column using gas chromatography and detected using flame ionisation detection (FID). The concentrations are determined by comparisons with the pure standards and are expressed in mg/kg on fat basis. As the GTH is trapped in the fat fraction, it can be found in the separated fat and in the fat fraction of the meal.

At a rendering company GTH (532 mg/kg added on fat basis) is added to the raw (animal slaughter by-products) material at the transport screws. The GTH dosage pump is automatically switched on when the transport screws are working. Every 8 hours a sample is taken to see if the GTH was homogenious divided within the contents. As a mean 292 mg/kg of the GTH (55% of the added amount) was found in the MBM. 303 mg/kg of the GTH (57% of the added amount) was found in the fat.

The detection limit of the technique used for analysis is set at < 5 mg/kg GTH on fat basis. In practice a dosage of 100 gram GTH/ metric tonne raw animal material (this is about 500 gram GTH/ metric tonne on fat basis) is sufficient.
GTH is recommended as a very suitable marker for all category 1 and 2 materials.

Keywords

Marker; animal by-products; analysis; gas chromatography; MBM; GTH; fat