# L.12.- Microscopic detection of animal proteins

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In the framework of the European Union funded project Stratfeed the microscopic method for detection of animal proteins in animal feeds has been improved, starting with the obligated method as published in Directive 88/1998. Major achievements are the enhancements of the sedimentation procedure, now based on the results of comparative experiments, a better described detection and evaluation process and more information on embedding agents, especially with respect to different viscosities. Tests by the partners and a validation study showed a major improvement in terms of reliability and repeatability. The new Directive 126/2003/EC is primarily based on the Stratfeed protocol, with some additions: the procedure is allowed to start with 5 grams of material instead of 10 grams, a sediment beaker is allowed as well, and more different embedding agents can be used. The French method with two solvents is prohibited for the time being.

Pure material of ruminant, pig, sheep and poultry has been produced in a pilot plant in a completely controlled and dedicated process. In addition, animal meals have been selected from the large sample bank, collected in the framework of the project, and stating a pure origin. Based on these materials the characteristics of bones of mammalian, avian and different fish types has been established. Literature sources has been used as reference and several odd or deviating descriptions were identified. A special case are some long bones of birds that show an appearance more or less similar to that of mammals. This causes considerable difficulties when mixtures of different vertebrate classes are assumed to be present in a feed. A new character has been developed based on muscle fibre information (muscle ratio: fibre width divided by sarcomere length). There are gradual differences between mammalian, avian and fish fibres, which can support a presumed identification based on bones. The statistics of the fibres also provide information on the distribution (standard deviation, frequency plot), which can help to identify mixtures of materials. This type of information is urgently needed for the discrimination between the different groups of animals (support of the species-to-species ban).

All information collected has been used to develop a Decision Support System, called ARIES (Animal Remains Identification and Evaluation System). This system can be applied for training and as support to the actual process of detection of presumed animal proteins in feeds. It provides three different modules for step-wise identification, a glossary, a gallery with additional series of images, a range of literature and information on legislation. ARIES will be made available as stand-alone system, and after proving sufficient interest from a market analysis as an internet-based system. A quick identification system called STRATFEED-DSS has been developed for internet application, based on 14 parameters divided in four different categories: macroscopic vs. microscopic and bone vs. additional features.

**Key words**

*Animal proteins, sedimentation procedure, microscopic detection, identification, Directive 126/2003/EC, species-to-species ban, muscle ratio.*