Maisons-Alfort, 25 October 2011

The Director General

OPINION
of the French Agency for Food, Environmental and Occupational Health & Safety

concerning the assessment of health risks related to the introduction of processed animal proteins in the feed of certain productive livestock

ANSES undertakes independent and pluralistic scientific expert assessments.
ANSES primarily ensures environmental, occupational and food safety and assesses potential health risks in these areas. It also contributes to the protection of the health and welfare of animals, the protection of plant health and the evaluation of the nutritional characteristics of food.
It provides the competent authorities with the necessary information concerning these risks as well as the requisite expertise and technical support for drafting legislative and statutory provisions and implementing risk management strategies (Article L.1313-1 of the French Public Health Code).
Its opinions are made public.

1. REVIEW OF THE REQUEST

In October 2010 the French Agency for Food, Environmental and Occupational Health & Safety received a request from the Directorate General for Food, the Directorate General for Competition, Consumer Affairs and Fraud Control and the Directorate General for Health to review all of the measures planned in the second European roadmap[1] for transmissible spongiform encephalopathies (TSEs) for the 2010-2015 period. Among the proposed measures is the revision of the ban on animal proteins in the feed of productive livestock, for which the Agency, as a result of an internal request, decided to create an expert working group. As the Agency had already issued an opinion on the subject in 2009[2], the expert group set out to update all the available data concerning the health risks related to the introduction of processed animal proteins (PAPs) in the feed of certain productive livestock (poultry PAPs for pig feed and pig PAPs for poultry feed; pig and poultry PAPs for fish feed).

2. BACKGROUND

In July 2010 the European Commission proposed a new roadmap for transmissible spongiform encephalopathies (TSEs) for the 2010-2015 period. This document allowed the relaxation of certain risk control measures related to TSE, in particular revisions of the list of specified risk materials, TSE monitoring procedures and the ban on animal proteins in productive livestock feed.

Before the 2000s, meat and bone meal was made from a combination of animal by-products, some of which turned out to have health risks for humans and animals. Today the regulatory term *meat and bone meal* refers to category 1[3] (intended exclusively for incineration) and category 2 (used as fertiliser and for other exclusively non-food purposes) animal by-products. Processed animal proteins (PAPs) themselves come from by-products that are completely different from those comprising meat and bone meal; they are protein raw materials, which are exclusively produced from by-products from animals fit for human consumption (category 3 by-products). This has raised

[1] *Communication from the Commission to the European Parliament and the Council. The TSE roadmap 2. A Strategy Paper on Transmissible Spongiform Encephalopathies for 2010-2015, dated 16 July 2010.*
[2] *AFSSA, (31 March 2009). Opinion regarding the revision of conditions for use of meat and bone meal in animal feed.*
[3] *By-products that may contain cadavers, products impounded for health reasons and specified risk materials (SRM).*

questions with regard to their use in certain animal feeds (apart from ruminants) and requires a health risk assessment. The French authorities therefore wished to obtain opinions from ANSES on the health aspects and from the French National Food Council (CNA) on the socioeconomic viewpoint.

At the European level, an opinion from EFSA (the European Food Safety Authority)[4] reports the results of a quantitative BSE risk assessment model (for cattle) in the event of the introduction of pig and poultry PAPs in the feed of non-ruminants. This model estimates the number of additional BSE cases that might result from the introduction of these PAPs due to cross-contamination between the ruminant and non-ruminant feed industries. According to this model's estimates, less than one additional case of BSE per year would be generated in Europe by the authorisation of poultry PAPs for pig feed and pig PAPs for poultry feed. Nevertheless, ANSES claims that this assessment, which is exclusively founded on a statistical approach, only deals with risks related to classical BSE. It does not assess the risk associated with intra-species recycling within poultry and pig species. The present ANSES opinion constitutes an additional assessment on this point.

In 2009[2] AFSSA carried out a first assessment on the TSE risks related to the introduction of PAPs in the feed of non-ruminants, with the exception of fish. It concluded that the use of poultry PAPs for pig feed and pig PAPs for poultry feed must be based on three conditions:

- ✓ Effective segregation of the industries producing and using these processed animal proteins;
- ✓ The existence of a validated method of detection and identification of processed animal proteins relative to the animal species of origin;
- ✓ Monitoring and traceability tools for the animal production industries.

As these conditions had still not been met, AFSSA recommended that current measures in effect be maintained that prohibited the use of PAPs in the feed of production livestock.

The present request aims to update this file and provide a scientific perspective to the risk management authorities.

As part of this appraisal, the General Council of Agriculture, Food, and Rural Areas (CGAAER) provided ANSES with a study on French industries manufacturing and using PAPs and other animal by-products. The present assessment concerns only the risks related to the use of PAPs produced by the French sector and coming from animals that were born, raised and slaughtered in France.

3. ORGANISATION OF THE EXPERT APPRAISAL

The appraisal was carried out in accordance with the French standard NF X 50-110 "Quality in Expertise Activities – General Requirements of Competence for Expert Appraisals (May 2003)".

The appraisal falls within the competence of the Expert Committees (CESs) on Transmissible subacute spongiform encephalopathies (TSSEs) and Animal feed (ALAN). ANSES entrusted the expert appraisal to the Processed animal protein for the feed of production livestock working group, which was set up on 21 February 2011. The methodological and scientific aspects of the work were presented to the CES between May and October 2011. They were adopted by the CES on TSSEs, pilot Expert Committee, after passing before the ALAN CES, which met on 13 September 2011.

4. ANALYSIS AND CONCLUSION OF THE WORKING GROUP

The position of the French Agency for Food, Environmental and Occupational Health & Safety is based on the conclusions of the Processed animal protein for the feed of production livestock working group, whose summarised data are presented below.

[4] *EFSA, (2011). Scientific Opinion on the revision of the quantitative risk assessment (QRA) of the BSE risk posed by processed animal proteins (PAPs). EFSA Journal, 9: 1947.*

The introduction in France of processed animal proteins (PAPs) from the poultry industry in pig or fish feed, and PAPs from the pig industry in poultry or fish feed under safe conditions was considered by analysing the following information :

- ✓ the zootechnical and health consequences of the ban on meat and bone meal in animal feed;
- ✓ the barriers to inter-species transmission (species barriers), which limit the transmission of agents of prion diseases;
- ✓ the organisation of the industries, enabling judgement of the cross-contamination risk;
- ✓ the methods of detection and identification of PAPs in compound feeds.

Concerning the zootechnical aspects[5]:

For all the concerned species, plant raw materials and mineral elements were used to substitute meat and bone meal[6]. This substitution had no notable effect in pigs. In poultry, zootechnical and health difficulties (digestive disorders, deterioration of litters, deterioration of feed conversion efficiency, etc.) were reported in the broiler industry, mainly in turkeys. The concurrent elimination of various feed additives (growth-promoting antibiotics, and histomonostats) however means that the subsequent problems cannot be specifically attributed to the elimination of these meat and bone meals in the feed of these species. In fish, the meat and bone meal was used in part to limit the use of fish meal. The zootechnical trials in which these meat and bone meals were replaced with plant proteins demonstrated some unfavourable effects, which varied according to the species of fish.

Concerning barriers to inter-species transmission (species barriers) in transmissible spongiform encephalopathies (TSE):

It should be noted that data on the transmission of TSEs in pigs, poultry and fish are rare, if not nonexistent, since they require tests with infected tissue (all TSEs included), which is seldom (in pigs) or not at all available (in poultry and fish).

In addition, the bulk of experimental data concerning inter-species transmission was obtained through the study of classical BSE, which had been the strain of interest over the last 20 years. Yet it is possible that the TSE risk in the future will be related to agents that preexisted the BSE epizootic, whose existence (for some of them) has since been demonstrated (classical and atypical scrapie, atypical BSE) and for which there is much less information available. It should also be borne in mind that the classical BSE epizootic probably emerged from a very small number of initial cases.

The rare experimental studies involving oral contamination of chickens with the BSE agent were not able to demonstrate transmission.

Pigs are susceptible to parenteral transmission of the BSE agent and to that of chronic wasting disease in wild deer. On the other hand, this species appears to be resistant to oral transmission of the classical BSE agent and to an isolate of classical scrapie. With the small amount of data available, it is not possible to rule out pig receptivity to atypical BSE (H and L) and to other agents of classical scrapie and atypical scrapie.

Concerning fish, recent studies report:

- ✓ the observation of neuritic plaques in sea bream that had been experimentally infected with the classical BSE agent (and to a lesser degree with an isolate of classical scrapie), with no demonstration of infectious characteristics associated with these lesions;
- ✓ the possibility of persistent prion infectivity in the digestive tissue of some fish if they had been exposed to a TSE agent.

It should be noted that no TSE was reported in the natural state of any of these species, with this information countered by the fact that no monitoring system for prion diseases was in place and that the tools necessary for potential detection are not available.

[5] Only the health aspects were studied and not the economic perspective following the ban on meat and bone meals.
[6] The term 'meat and bone meals' refers here to any high-protein animal by-products used before their ban in November 2000.

In all cases, due to their limitations, the various experimental studies were not able to completely rule out the possibility of transmission and adaptation of the TSE agents, as the inter-species transmission barrier is not absolute.

Considering all of this information, the risk of amplification (appearance of a epizootic phenomenon) of TSE agents may be considered negligible if the following can be prevented:

- ✓ any ingestion by non-ruminants of PAPs from ruminants;
- ✓ any ingestion by non-ruminants of PAPs from the same species.

Concerning organisation of the industries with regard to cross-contamination:

One study conducted by the CGAAER points to increased specialisation by animal species in the organisation of the industries, mainly in the factories of PAP production. However this study reports that the steps of PAP transport and compound feed manufacture and transport are not solely dedicated to these products, which can lead to cross-contamination. This study did not consider the highly probable risk that still exists of errors in feed distribution within multi-species farms.

Concerning methods of detection and identification of PAPs in compound feeds:

The current official reference method for detection of processed animal protein is optical microscopy analysis, which is only able to determine the presence or absence of animal products in a feed. It cannot identify the animal species used in the composition of the PAPs.

The European Union Reference Laboratory has worked for several years on different techniques for identifying the animal species used in PAPs; the PCR technique is the most advanced among them. A nucleic probe that is specific for cattle species has been validated, but those of other species (other ruminants, poultry, pigs) have yet to be constructed and/or developed. The transfer of these techniques to laboratories involved in field monitoring, as well as inter-laboratory testing, are also anticipated. Many steps are therefore still required before achieving a method that can be used in routine testing. The PCR technique however cannot differentiate PAPs from animal products that are currently authorised in animal feed (milk, egg products, etc.). In order to compensate for the limitations of the PCR method, the combination of optical microscopy and PCR is planned, but its implementation in the short-term is not possible.

5. CONCLUSION OF THE AGENCY

The French Agency for Food, Environmental and Occupational Health & Safety endorses the conclusions of the working group.

In 2009, the French Food Safety Agency (AFSSA, which became ANSES in 2010) recommended preconditions for the use of processed animal proteins: complete segregation of the industries that produce and use PAPs, as well as development of a validated routine method of detection and identification of these products in order to distinguish the animal species of origin.

The inventory compiled at the request of the CGAAER shows a positive trend towards greater specialisation in the industries of processed animal protein production.

Nevertheless, specialisation by species in the industries, ranging from the collection of animal by-products for the manufacture of PAPs to the delivery of compound feeds in farms, remains imperfect, and analytical methods for testing the PAP species of origin are still unavailable.

ANSES therefore considers that the conditions enabling the safe use of PAPs have not been completely met at this time.

The Director General

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KEY WORDS

Processed animal protein, animal feed, prions, TSE, pig, fish, poultry, ruminant