



CHRONIC WASTING DISEASE IN UK DEER

ISSUE

1. The FSA have asked SEAC to consider the current knowledge on, and comment on the possible public and animal health implications of, CWD in UK deer.

BACKGROUND

2. Over the past few decades, chronic wasting disease (CWD) has emerged as an endemic transmissible spongiform encephalopathy (TSE) in a number of captive and free-ranging cervid species (mule and white-tailed deer and Rocky Mountain elk) in some areas of North America. To date, CWD has not been detected elsewhere in the world. CWD is naturally transmissible from infected to susceptible cervids. The primary route(s) of infection are unclear but it is possible that it may be transmitted *via* contaminated environments. The origins of the disease are unknown. CWD is the only known TSE to occur naturally in cervids.
3. CWD is experimentally transmissible to non-cervid species by intracerebral inoculation. Very few studies have investigated experimental transmission to non-cervid species by oral routes that may mimic the possible natural route(s) of infection. In these studies, oral transmission of CWD has only been successful to North American cervid species. Thus, it is unclear whether CWD could be naturally transmitted to other cervid and non-cervid species.
4. There is very limited epidemiological data on the possible transmission of CWD to humans as a result of consumption of infected venison. No definitive or suspected cases of transmission of CWD to humans have been reported. Thus, it is not known whether CWD can be transmitted to humans from consumption of venison.

5. It is likely, prior to the reinforced mammalian meat and bone meal (MMBM) ban in 1996, that both captive and free-ranging deer species in the UK, and possibly elsewhere in Europe, were exposed to contaminated feed. Studies investigating experimental transmission of BSE to cervids have not been completed. Although no TSEs have been detected in deer populations in the UK (or elsewhere in Europe), surveillance data are limited. Thus, it is possible that BSE may have been transmitted to, and could be present in, UK deer. If present, deer infected with BSE could present a risk to consumers of venison.

SEAC CONSIDERATION

6. SEAC has not considered CWD previously. The committee is asked to consider the possible public and animal health implications of CWD in UK deer with a view to producing a SEAC position statement. The literature on CWD is extensive. It is therefore, envisaged that this consideration could be conducted over two consecutive meetings. The first meeting (SEAC 85) would consider the current knowledge on TSEs in deer. A list of possible areas for discussion is given at the end of the paper with a view to formulating a draft position statement and identifying key issues and questions for further discussion at the next meeting (SEAC 86). If SEAC require, it may be possible to invite an expert on CWD to SEAC 86 to provide additional expertise for consideration of the key issues identified.
7. This paper provides the following information:
 - Two recent scientific reviews on CWD from the Wildlife Information Network (October 2004) and the EU Scientific Steering Committee (March 2003).
 - An overview of the UK deer industry (2002).
 - A summary of current TSE surveillance in deer in the UK and elsewhere in Europe as well as an EFSA opinion on TSE surveillance in deer.
 - A summary of current FSA research on the susceptibility of UK red deer to BSE infection.
 - Possible exposure of UK deer to TSEs as well as sources and consumption of venison in the UK.

REVIEWS OF CWD

Wildlife Information Network

8. A review of available scientific literature (up to October 2004) on CWD has been prepared by the Wildlife Information Network (Annex 1). It covers current knowledge in the following areas:
 - Distribution and host range
 - Diagnosis and detection
 - Epidemiology
 - Susceptibility and routes of transmission
 - Public and animal health implications

Scientific Steering Committee

9. The TSE/BSE ad hoc group of the EU Scientific Steering Committee (SSC) conducted a review of the scientific literature on CWD in March 2003 (Annex 2). The SSC concluded that:

“A theoretical risk for prion transmission to humans consuming products of CWD affected-cervids of all ages in countries where CWD exists cannot be excluded. Similarly, a transmission risk of prions to domestic animals cannot be excluded. There is therefore, a scientific basis on which to exclude tissues from animals that carry a CWD risk from the human and animal feed chains.

However, the early and widespread involvement of tissues in CWD infected animals does not allow a SRM list, neither to define any lower age cut-off as has been defined for cattle in relation to BSE. Neither is there sufficient knowledge to define exclusions or amendment of any SRM rule of the basis of relative genetic resistance to infection as has been proposed for sheep and goats in the event that evidence indicates the probable natural occurrence of BSE in these species.

Although available information indicates imports of live Cervidae from North America to EU and trade in meat products from cervid species as being negligible, it is important to reach certainty that no transfer of risk takes place through trade of live cervids and its derived products.

At present, there is no scientific data that CWD is occurring in Cervidae elsewhere than in those countries from which it has previously been reported. However, systematic TSE surveillance

of cervid populations has either been absent or has only just started in European countries. Until the results of such surveillance become available no conclusion can be drawn with regard to the occurrence of CWD or similar TSE in the cervid population of Europe.”

REPORT ON THE UK DEER INDUSTRY

10. Information on the deer industry and venison trade in the UK is limited. A 2002 report by Professor Ranald Munro (Royal (Dick) School of Veterinary Studies, Edinburgh) provides an overview of the type (wild, farmed, park or zoo), size and geographical distribution of the five main deer species in the UK (Annex 3). Information on trading and slaughter practices, routes of supply of venison into the food chain and disposal of fallen stock and by-products is also provided. The report was commissioned by Defra and FSA to inform surveys of TSEs in UK.
11. In the report, Professor Munro makes a number of observations about the possibility of TSEs in UK deer (pages 43 and 48-50):
 - Although surveillance is limited, as yet, CWD has not been found in deer populations in the UK.
 - Prior to the reinforced MMBM ban in 1996, deer were exposed to feed potentially contaminated with MMBM.
 - Red deer, a deer species prevalent in the UK, are closely related to Rocky Mountain elk (a North American species known to be susceptible to CWD). Thus, of the five principal UK deer species (red, roe, fallow, sika and muntjac), red deer may be the UK species with the greatest potential to develop TSEs.
 - Early in the BSE epidemic, cases of BSE occurred in zoological collections of a number of species (antelope, Ankole cattle, bison, eland, oryx, gemsbok, kudu and nyala) presumably from the use of feed concentrates contaminated with MMBM. Although deer in zoos were fed similar concentrates, there are no reports of BSE cases in these animals.

SURVEILLANCE OF TSEs IN EUROPEAN DEER

12. Limited surveys have been carried out for TSEs in European deer populations but, to date, these programmes have not reported

TSE cases. A summary of TSE surveys of deer in the UK and other EU Member States is given at Annex 4.

13. The European Food Safety Authority (EFSA) recently published an opinion on proposals for an EU surveillance programme for TSEs in deer (2004) (Annex 5). The opinion is under consideration by the EU.

FSA RESEARCH ON TSEs IN DEER

14. A FSA funded study is underway to investigate if UK red deer (a species closely related to Rocky Mountain elk) are susceptible to BSE infection by oral or intracerebral challenge (Annex 6). The study is in its early stages and is due to complete in 2007. To date, there are no clinical or pathological signs of BSE in orally or intracerebrally challenged animals at 12 or 6 months post-administration, respectively. Please note that Annex 6 has not been circulated outside the committee as it contains new scientific data that has not yet been published in a scientific journal.

ANIMAL EXPOSURE AND VENISON CONSUMPTION

Potential exposure of UK deer to TSEs

CWD

15. No live cervids from North America have been imported into the EU (see Annex 2, page 38). In addition, HM Customs and Excise have no record of imports of live cervids from North America into the UK. Thus, opportunities for natural transmission of CWD from infected animals imported from North America into the UK or Europe have not been available.

BSE

16. There are no quantitative data that would allow an estimation of past exposure of wild, farmed or park (and zoo) deer to animal feed containing MMBM. However, it appears likely that each of these deer populations consumed MMBM to some extent (see Annex 3 page 10).

Sources and consumption of deer and elk products in the UK

17. In the UK, much of the venison from wild deer is exported (see Annex 3, pages 29-33). However, most venison from UK farmed deer is sold in the UK (see Annex 3, pages 38-39).
18. Specific figures for imports of edible deer and elk products from North America into the EU are not available. However, figures for 'game meat (excluding rabbits, hares and swine)' suggest that a very limited quantity of deer and/or elk meat may have been imported from North America into the EU, including the UK, over the period 1988-2001 (see Annex 2, pages 51-52). More recent information (2001-2004) from HM Customs and Excise supports this conclusion.
19. There are few data on consumption of UK produced or imported venison. National Diet and Nutrition Surveys^{1,2,3} provide profiles of eating habits in the UK. An analysis of the surveys indicates that venison is rarely consumed in comparison with beef and lamb (of the combined total of 5608 consumers in the surveys, 2064 (37%) had consumed lamb, 4819 (86%) had consumed beef and 12 (0.2%) had consumed venison). Data on venison consumption from the surveys suggest a trend towards increased venison consumption (0.14% versus 0.41% of consumers ate venison in the years 1986/7 and 2000/1, respectively). However, the data are too limited to allow a quantitative assessment of venison consumption.

ADVICE SOUGHT FROM THE COMMITTEE

20. The committee is asked to consider the possible public and animal health implications of TSEs in UK deer with a view to producing a SEAC position statement. The FSA have asked that SEAC address the following question in the position statement:
 - What is the level of risk posed to consumers from eating meat from a CWD infected animal?
21. To help its consideration the committee may wish to consider the following areas:

¹ J Gregory, K Fisher, H Tyler & M Wiseman. Dietary and Nutritional Survey of British Adults, HMSO, 1990.

² S Finch, W Doyle, S Lowe, C Bates, A Prentice, G Smithers & P Clarke. National Diet and Nutritional Survey; People 65 Years and Over. Volume 1: Report of the Diet and Nutrition Survey, TSO 1998.

³ L Henderson, J Gregory & G Swan. National Diet and Nutritional Survey; Adults Aged 19 to 65 years. Volume 1: Types and Quantities of Foods Consumed, TSO 2002.

- possible origins of CWD.
- possible routes of intra- and inter-species transmission of CWD.
- potential susceptibility of UK cervid and non-cervid (livestock) species to CWD.
- likelihood of the presence of TSEs in UK deer.
- possible human and animal health risks of TSEs in UK deer.

Are members aware of any other data that can add to the information in this paper?

Would the committee wish to invite an expert on CWD to the next meeting and, if so, could members suggest a particular expert?