



TAFS

INTERNATIONAL FORUM FOR TRANSMISSIBLE ANIMAL DISEASES AND FOOD SAFETY
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TAFS¹ STATEMENT ON TRANSMISSION OF SCRAPIE VIA MILK

With regards to:-

Konold et al.: Evidence of scrapie transmission via milk, *BMC Veterinary Research* 2008, **4**:14;
doi:10.1186/1746-6148-4-14; Published 8 April 2008; Available at:-
<http://www.biomedcentral.com/1746-6148/4/14/abstract>

TAFS welcomes publication of these findings. They contribute to the understanding of the mechanisms of transmission of scrapie as a prion disease of sheep and goats that has been known for over 200 years.

Scrapie is not a highly contagious disease. It does not spread easily, but it is difficult to eradicate. It is known to spread between sheep, both from ewe to lamb and to other unrelated sheep and goats. The exact route of transmission has not been determined so far. There are several possible routes, which include contact with placenta of infected ewes, or possibly before birth while the lamb is still in the womb. Transmission via milk and/or uterine fluids after birth are additional possibilities.

The study being reported attempted to assess the scope for transmission, under a worst-case scenario, by collecting milk from sheep of highly susceptible genetic makeup (high risk group), at a time when they were either about to die of scrapie, or when the first clinical signs were seen. Their milk was collected and fed to lambs that were born to uninfected mothers and kept in isolation while they received the milk. These lambs were also of the most susceptible genotype (VRQ/VRQ).

The lambs have been shown to be infected by the testing of tissue samples collected either while still alive, by biopsy, or from some that had died of other diseases. None have yet reached the point of clinical disease themselves, and infectivity itself has not been demonstrated. Tests have revealed the presence of abnormal prion protein (PrP^{Sc}) that is normally recognised as a marker for the presence of infectivity.

The success of the study was dependent on having scrapie-free lambs to receive the milk. Despite having fully susceptible ewes and susceptible lambs, the ease with which the lambs were infected is a

¹ TAFS is an international platform created by a group of scientists, food industry experts, animal health regulators, epidemiologists, diagnosticians, food producers, and consumers. Its purpose is to establish and maintain lines of communication for the dissemination of reliable information to the public that can maintain confidence in the safety of food with regard to Transmissible Animal Diseases.

surprise. The experimental design anticipated transmission to smaller numbers of lambs. For this reason lambs received both milk and colostrum (the milk produced within the first 24-48 hours after lambing) from the same ewe in order to maximise the likelihood of transmission. As a result, it is not possible to conclude at this point whether transmission occurred via colostrum, milk or both. The study will therefore now be repeated, feeding lambs only on colostrum or milk.

This is important for several reasons.

- Firstly, colostrum would not be used for human consumption.
- Secondly, colostrum is rich in protein and antibodies that help to protect the lamb in the early days of life before its own immune system is fully functional. For that reason farmers sometimes collect and freeze colostrum to feed to other lambs, sometimes pooling it to feed to several lambs. This practice could increase the potential for infection of lambs at their most vulnerable time of life.

Scrapie is not recognised as a risk to humans, although this cannot be ruled out with certainty. The risk to humans from scrapie, and the scientific uncertainties that underpin any statement on risk, have been discussed at length in the two EFSA Opinions cited below. Since there is no established evidence to date that scrapie poses a risk to human health, the finding that it is transmissible from sheep to lambs via milk does not give any reason to change our view that ovine and caprine milk are safe for human consumption.

These results do not at the moment have any direct implications with respect to the risk from BSE in milk from cattle. Although an equivalent study has not been conducted in cattle, other studies attempting to find infectivity in bovine milk have not succeeded. Proving the total absence of infectivity is extremely difficult. The evidence for the absence of natural spread of BSE between cattle, from cow to calf or between unrelated cattle does however suggest that even in natural equivalent of this experiment, the feeding of calves on cows' milk, transmission has not occurred, or does so only rarely. Consequently, cows' milk is unlikely to carry BSE infectivity that might put consumers at risk. Furthermore, the control measures that have been put in place to eradicate BSE, and protect consumers in the interim, are succeeding in reducing numbers of infected cattle year by year.

In conclusion, the study helps to better understand the epidemiology of scrapie, and may provide an impetus for additional measures to further strengthen animal or public health protections in regard to small ruminants TSEs. However, it does not put in question the safety of products derived from bovine milk destined for human consumption.

References.

EFSA (2007). Opinion of the Scientific Panel on Biological Hazards on certain aspects related to the risk of Transmissible Spongiform Encephalopathies (TSEs) in ovine and caprine animals. 8 March 2007. The EFSA Journal. **466**:1-10. Available at:-
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