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## Prion diseases found in affected sheep's milk 20 months before animals develop symptoms

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Do you like imported sheep's milk cheeses, for example, a special type of Feta or other cheeses made with sheep's milk? How about cheeses made with goat's milk?

Not that Feta cheese has prions, of course, but there could be *theoretically* speaking only, a rare possibility that any product, whether it be cheese, kefir, yogurt, protein powders, or ice cream made from sheep's or goat's milk anywhere and imported to the USA, or made in the USA could possibly be made with milk that looks good to testing, but the sheep or goats *might* 20 months later develop symptoms of prion diseases without it showing up before in tests.

At least, studies speak for sheep's milk, but theoretically goat's or cow's milk could have the same result. Only further testing will give up the answer. For now, numerous scientists insist that prion diseases can't be passed to humans through animal milk.

The emphasis is on the theory that it could or might, not that it ever has yet--because no one knows for sure what could happen. The important point to remember is that the sheep first have to be affected with prions. Same with goats. Someone has to feed the sheep or goats the prions. There's no danger in the milk of normal sheep or goats that are not secreting prions into their milk. Here's the study that scientists did. They took clinically affected animals and tested the sheep's milk to see whether prions showed up.

The evidence reported that *prions are secreted in milk* from clinically normal sheep *that have been exposed to scrapie*. The important point to remember is that it took 20 months for the scrapie symptoms in the sheep to show up, but the prions were found in the milk long before the scrapie symptoms appeared, according to a study reported in the [Journal of Virology](#), August, 2009.

See the article based on the study, "[Prions Are Secreted in Milk from Clinically Normal Scrapie-Exposed Sheep](#)." The authors of the study, B. C. Maddison, C. A. Baker, H. C. Rees, L. A. Terry, L.

Thorne, S. J. Bellworthy, G. C. Whitelam, and K. C. Gough, Department of Biology, University of Leicester, UK, found that, "The potential spread of prion infectivity in secreta is a crucial concern for prion disease transmission." Also see the PDF file, "[Chronic Wasting Disease and Potential Transmission to Humans](#)," in the government publication, [Emerging Infectious Diseases](#), Vol. 10, No. 6, June 2004.

The result of the study in plain language means that if the sheep are exposed to prions, it can show up in their milk at least 20 months before the sheep actually showed clinical symptoms of the disease. According to the study, "serial protein misfolding cyclic amplification (sPMCA) allowed the detection of prions in milk."

These data indicate the secretion of prions within milk during the early stages of disease progression and a role for milk in prion transmission. So now it is possible, the study found, to find prions in sheep's milk, if the sheep are affected with prions but don't show symptoms yet.

The study noted, "Furthermore, the application of sPMCA to milk samples offers a noninvasive methodology to detect scrapie during preclinical/subclinical disease."

See [Terry's Singeltary's](#) blog referencing this study and earlier studies on this same topic. According to [Terry's Singeltary's](#) blog, "The potential spread of prion infectivity in secreta is a crucial concern for prion disease transmission."

Scientists look in the tissues of both the central nervous and lymph systems of the animals for evidence. But what if nothing shows up for 20 months? Even while nothing is showing up on tests, what's going on, yet unseen, is the secretion of prions within milk during the early stages of disease. Researchers need to follow the progression of the disease, but just as important to look at is the role milk plays in prion transmission.

Researchers need to sample more milk from sheep. A huge market is in sheep's milk cheese, such as certain types of Feta and other cheeses made from sheep's milk. You'll find imported sheep's milk cheeses at various ethnic delicatessens, food faires, and grocery stores. Some of these sheep's milk cheeses are imported to other countries, including the USA.

If scientists want a noninvasive methodology to find scrapie prions in sheep before the sheep come down with symptoms, what the medical world calls the preclinical or subclinical disease stages, more milk samples need to be tested. It's a good project for graduate science classes to look at imported cheeses made from sheep's milk to see whether prions are in the cheese, if the classes have the right kind of equipment to detect the prions.

For further information, also see the article based on a study, "[Prion Disease Spreads Through Sheep's Milk](#)," published in the April, 16, 2008 issue of [New Scientist](#). According to the article, "Experiments on lambs genetically predisposed to developing scrapie provided the proof." Gut tissues from two out of three culled "scrapie-fed" lambs were positive for scrapie, as were biopsies from the rectums of the 15 surviving scrapie-fed animals.

The study noted, "Rectal samples from controls were negative, implying that milk spread the disease." However, numerous scientists still insist that prion diseases do not spread to humans

through animal's milk. Read the article to see the various scientists statements on that topic. On the other hand, read another article, "[Prion Protein in Milk.](#)"

According to the article "[Prion Protein in Milk](#)" based on European studies, "There is increasing evidence that prions are present in body fluids and that prion infection by blood transmission is possible<sup>1</sup>. Using the technology developed by Allprion to detect (Allprion PrioMax®) and to remove (Allprion PrioMin®) prion protein from body fluid, we are able to show that PrPC is present in milk from humans, cows, sheep, and goats."

The [Prion Protein in Milk](#) article based on studies noted, "The absolute amount of PrPC differs between the species, from µg/l range in sheep milk, to ng/l range in human milk. Off-the-shelf milk contains significant amounts of endogenous prion protein even after ultra-high temperature treatment."

So cooking won't kill the prions. The [Prion Protein in Milk](#) article based on studies noted, "In view of a recent study showing evidence of prion replication occurring in the mammary gland of scrapie infected sheep suffering from mastitis<sup>2</sup>, the appearance of PrPC in milk implies the possibility that milk of TSE-infected animals serves as a source for PrPSc. allprion PrioMax® allows the study of the biosafety of milk with regard to TSE risk. Such studies were recently recommended by the European Commission and the European Food Safety Authority<sup>3</sup>."

Prions can't be taken out of meat when you cook the meat. All those prion-related case histories of people that ate tainted meat in Europe had eaten cooked meat, not raw animal products. For further information, see the following references based on several studies.

### References

1. Ironside, J.W., et al. Variant Creutzfeldt-Jakob disease: risk of transmission by blood and blood products. *Haemophilia* 10 Suppl. 4, 64 (2004).
2. Ligios C, et al. PrPSc in mammary glands of sheep affected by scrapie and mastitis. *Nature Med.* 11, 1137 (2005).
3. Statement of the European Food Safety Authority on the health risks of the consumption of milk and milk derived products from goats (2004). Last updated 15 March 2006.

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