

Unintended Consequences

"Don't worry." We have all been told this. But should we continue to worry after this reassurance? In the 1980 when Britain was struck by a mysterious disease and thousands of cattle began stumbling and falling, unable to stand, the citizenry were told, "Don't worry". Through the next decade, 4.4 million cattle were slaughtered and burned during a national eradication program in the U.K. Throughout this time, British citizens were told there was little risk. Don't worry, said the government, you are safe.

Who was this hidden enemy who could fell so many cows that resisted antibiotics and seemingly could not be controlled without such drastic measures paralleled by only those of the days of the Black Death?

As the government worked hard to reduce the public panic, scientists were also hard at work. Who or what was so mighty that so many must be slaughtered but yet was so insignificant that you are told that you shouldn't worry about it? The scientists knew this disease was a neurological one but what caused it? In 1982, Stanley B. Prusiner announced to the world that he had

Prion infected tissue

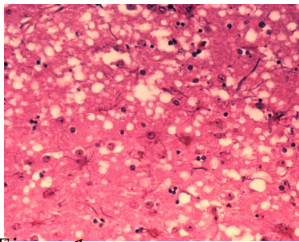


Figure 1

found the cause of this mysterious neurological plague. He called it the prion protein. Some members of the scientific community ridiculed him, as original thinkers often are, about his hypothesis of the cause being a protein. Proteins do not contain nucleic acids which all other infectious agents at the time contained. Nucleic acids are considered the informational molecules of biological systems, the most common of which is DNA. They were scared of the idea that such a deadly disease could be caused by a single protein without the aid of information carrying molecules.

The Neurological Plague

As scientists began to tackle the prion, they soon found that it was a formidable enemy. The prion can survive up to 600 degrees Celsius or 1100 degrees Fahrenheit. It is resistant to chemical and physical denaturation agents. It cannot be destroyed by cooking.

A prion is a misfolded protein. Once it enters a healthy organism, it converts healthy proteins into its twisted form. Figure 2 shows a normal protein on top with mostly alpha helices (the purple spirals) and a bit of beta pleated sheet (blue arrows) and a prion on the bottom. You can see that in the prion the beta pleated sheets have taken over the alpha helices. It slowly destroys the infected host's brain piece by piece. It is responsible for mammalian transmissible spongiform encephalopathy (TSE). The prion causes microscopic "holes" in the affected tissue causing it to be "spongy" (see fig. 1).

Prion diseases are mainly spread by eating food contaminated with brain, spinal cord, or digestive tract of a prion infected organism and are currently untreatable and fatal. The first symptom in

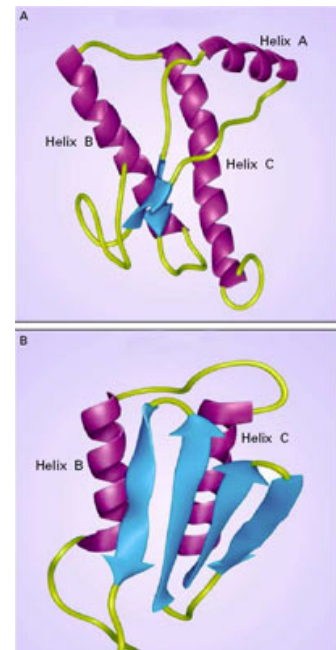


Figure 2

Raw product being rendered



Figure 3

most prion diseases is rapidly progressive dementia. This is often partnered with physical symptoms like ataxia.

One might think it only effects cows. That is incorrect. It also effects sheep and goats. But not only those. It also effects white-tailed deer, elk, mule deer, moose, and a few mink in Wisconsin. One might think that that must be the end of the list. Also incorrect. It also effects nyala, oryx, greater kudu, ostrich, cats, and humans. (1)

TSEs in humans are Creutzfeldt-Jakob Disease, kuru along with even rarer diseases as familial insomnia and the even rarer disease Gerstmann-Straussler-Schienker (3). Variant Creutzfeldt-Jakob Disease (vCJD) is the only form of prion disease in humans that is caused by eating food contaminated with prions although kuru also falls in this category if you consider cannibalism a source of food. It is often confused with mad cow disease and is believed to be caused by eating contaminated beef. Cows are usually affected by transmissible bovine spongiform encephalopathy (BSE) commonly called mad cow disease. Affected cows usually become distant from the herd and show progressively deteriorating behavioral and neurological signs. They become increasingly aggressive and react excessively to noise or touch. They may also show a drop in milk production and anorexia.

Like vCJD it is also caused by eating contaminated meat. But cows don't eat meat. So the disease should have stopped within cattle after the first infected cow died. (2)

Imagine a steer infected with BSE. He stands ankle deep in his own manure and walks unsteadily. After a week, he staggers around by himself. A gray steer, now brown from the caked manure covering his hide, accidentally brushes our staggering steer. The steer is enraged and charges as well as he can. He collapses into the floor of manure, unable to stand. The next day, he and countless others are shipped off to the slaughterhouse and on the train he dies. His carcass is sent to a rendering plant and the cycle of forced carnivorousness begins.

The Dark Side of Recycling

Behind the closed doors of the rendering plant, one of the worlds oldest and most hidden processes begins. Rendering is the process that converts waste animal tissue into stable, value added material.

The whole carcass of our staggering steer is heaped in a pile next to the carcasses of dead raccoons, deer, rats, euthanized cats and dogs still in their green plastic bags from the vet, dead zoo animals, various entrails, heads, and hooves from other cattle, sheep, pigs, and horses, and roadkill. The flies and maggots swarm and squelch idly about the "raw product". The flies' dull waltz through the air is suddenly disturbed as two men, operating mini bulldozers, begin moving the raw product to the grinder. There is not enough time for such trivial things as removing flea collars, ID tags, pesticide patches, surgical pins and needles, or the maggots. It all goes into the grinder. As the jaws of this metal monster begin to churn, a truck arrives and dumps its load of foul-smelling fish, pork, beef, and chicken. All of it is supermarket reject. No time to remove packaging, just straight into the grinder. After the mass of raw product, styrofoam, and whatnot squelches, pops, and squeezes its way through the giant blender, the rough chunks of our staggering steer and its accompanying meat hunks are sent to a finer blender to be chopped and mangled into a lumpy sludge that resembles a bloody stew. Then this stew is steam cooked. As it cooks it produces a yellow grease that is skimmed off and sent to chemical manufacturers who can then send it to other manufacturers who can then use it in cement, ink, lipstick, polish, grease, soap, candles, pharmaceuticals, and gummy candies, to name a few.

The remaining cooked meat is sent to a hammer mill and pressed to have every last drop of moisture squeezed out of it and pulverized. It is sifted to remove any extraneous hair and large bone chips. The final product is a gritty powder called meat and bone meal and is used as a protein supplement in pet food and various other animal feed including cattle feed. (4)

Cattle feed should not contain meat or meat byproducts. Cows are not supposed to eat meat. Cows are made to eat herbage. Herbage is plant material... not cows, but usually grass...

As the forced cannibalism grows, so does the risk for bovine spongiform encephalopathy. For once, a disease is ravaging throughout our food source with not ticks, not fleas, but humans to blame. Since the outbreak of mad cow disease, the regulations and temperatures of rendering have been tightened and raised but many might argue, not by enough. Rendered meat must now be cooked at 115 degrees C to 145 degrees C. (5) These temperatures are not sufficient to destroy prions. It is not possible to purify food of prions without destroying all of its nutritional value which would destroy the purpose of rendering. It is now illegal to render the brain of a prion infected organism. But there aren't regular examinations of rendering plants. The USDA has declared it illegal to test for prions. This is because of the lobbying of large meat producers that do not want to test for prions.

Rendering: Good or Bad?

One may think that we would all be better off without rendering plants. This is not entirely possible or correct. The city of Los Angeles alone sends in approximately 200 tons of euthanized cats and dogs to West Coast Rendering every month according to Chuck Ellis, a spokesman for the city's sanitation department. (6) 200 tons for just one city. 200 tons of *only* cats and dogs, no beef, chicken, or pork. There would be nowhere for all that meat to go. It would all probably be destroyed. If you burned it all, it would cause terrible air pollution. If you put in landfills, it would be a colossal public health issue not to mention the stench. There is also the issue of the world's limited supply of protein. If all of that meat were destroyed, there may not be enough protein to go around.

Rendering plants are an unavoidable solution, for now. The most obvious alternative would be to require testing and regulate rendering plants much more rigorously. This will not and cannot happen until meat businesses begin to look past their own short-termed monetary gain and look to the future.

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Images:

Title page image-

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Figure 1-

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Figure 2-

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Figure 3-

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