TRANS-SPECIES FAQ's

What about . . . MAD COW DISEASE?

With Mad Cow Disease, more formally called *bovine spongiform encephalopathy* or BSE, again rearing its ugly head in the press, we thought it appropriate to address it. BSE is a progressive, neurodegenerative disease in cattle. In 1996, British scientists determined that BSE was a threat to the human food supply when individuals suspected of having eaten BSE-tainted beef developed a similar fatal disease called "new variant Cruetzfeld-Jacob disease" (nvCJD). No treatment or protective vaccine exists for BSE and, historically, it has only been diagnosable after death. Once suspected BSE animals are destroyed, their brains are examined for what is known as the "architectural destruction" (i.e., *vacuolation* and *fibril formation*) seen in the disease. Some agencies and research facilities also test for the presence of an abnormal protein associated with BSE, the *prion* PrP(res) protein.

Mad cow disease, like the similar Creutzfeldt-Jakob Disease (CJD) in humans, Scrapie in sheep and Chronic Wasting Disease (CWD) in deer/elk [known collectively as *transmissible spongiform encephalopathy* or TSE], is strongly linked to the presence in brain tissue of that aforementioned *prion*. Whether the *prion* is the root cause of the disease, however, is still hotly debated. The scientist who characterized and named the *prion* (meaning "infectious protein"), Dr. Stanley Prusiner, won the 1997 Nobel Prize in medicine for discovering "an entirely new genre of disease-causing agents." Prusiner and Legname are among those calling for testing all, or nearly all, cattle for mad cow disease. They believe the current U.S. Department of Agriculture method of testing only the brains of select cattle using stained antibodies that react to specific *prions* detects neither lower levels of infection nor all the varying *prion* strains. *"The USDA is saying the beef muscle is safe, but we don't really know that,"* Legname said. In truth, nerve ganglia run throughout muscle tissue enabling it to function appropriately. They also believe the infection may be occurring "spontaneously" (as CJD does in humans and CWD in deer) therefore not necessarily coming only from feed made of contaminated animal products, as commonly stated.

While TSE's involve *prions*, *prions* may not be their fundamental cause. Zoologist, independent researcher, international lecturer (including at Harvard Medical School) and English organic farmer Mark Purdey, presents a riveting, if controversial, environmental causal theory. Purdey's hypothesis was formulated from independent, self-funded field studies which involved a total eco-analysis of several noted TSE-cluster and TSE-free zones around the world. The results suggested that a combination of high manganese/low copper combined with high environmental oxidizing agents (chemicals, heavy metals, infra-sound, ultra-violet light, etc.) could initiate a self-perpetuating free radical mediated *neurodegenerative disease* process, or TSE, in susceptible genotypes. There are thirty-plus references and papers published, 14 of which are his own, in peer reviewed academic journals supporting this hypothesis plus he has a number of PhD candidates working on their own theses with him. We give a precis below, but for those interested in the full scientific data available, please visit www.markpurdey.com. In fact, concerned farmers and ranchers, or anyone else, can email Purdey with questions: TSEPurdey@aol.com.

Transmission

From the beginning of the UK BSE outbreak, Purdey questioned the *prion* infection theory. Cows were supposedly infected by feeding on supplements containing the brains of sheep with Scrapie, yet Shetland Islanders had been eating potted sheep brains for centuries without similar diseases occurring. And although there was a great deal of panic, there were actually only 82 cases of vCJD in humans, 80% of whom were in rural areas where organophosphate pesticides were used at 100 times average levels for all crops. He also noted that British byproducts were exported around the world, yet the 170,000 British cases of BSE far outnumbered the total in the rest of the world. Cases of BSE had been found on organic farms with cows brought in from outside, but not on those raised from birth on the organic farms, even though organic farming rules allow restricted amounts of the suspect MBM (Meat & Bone Meal) feeds. Both Canada and Japan are stating that BSE is appearing in range fed cattle or cattle born *after* the ban of any meat products in cattle feed went into effect and vegetarians have evinced CJD.

According to Purdey's research, the only evidence of transmissibility *"stems from the numerous needless and abhorrent inoculation trials where TSE affected brain has been injected into TSE-free lab animals, and produced TSE."* He believes there is no evidence to support the notion that this disease can transmit via body to body, saliva, feed, etc., in the open natural environment except perhaps though vertical transmission via the placenta.

Minerals

Realizing there had to be more involved, Purdey also found extremely high Manganese levels and low Copper, Selenium, Zinc and Iron (the antioxidant metals); this mineral imbalance was not the case in geographically similar areas where no illness was found.

Consequently, Purdey theorizes that sporadic TSE is essentially trivalent manganese (Mn) toxicity on top of subclinical copper (Cu) deficiency. He points out that classic Mn toxicity hallmarks such as *amyloid fibrils*, neuronal loss, *astrogliosis* and shrunken basal ganglia are present in TSE neuropathology. Rather his research indicates that the actual infectious pathogenic agent in TSEs is the ferrimagnetic metal component of the mis-folded prion protein - eg the rogue metal that has substituted for copper at the PrP's metallo domain. The ferrimagnetic capacity of a metal remains resistant to radiation treatment and heating up to its curie point (eg; 500-900 degrees). Since this is identical to the resistant properties of the so called infectious *prion*, it could well represent the infectious component of the *prion*.

Research at Cambridge University shows that Mn bonds to the vacated Cu domains (from inadequate Cu levels) forming the misfolded *prion* protein that is a central hallmark of the spongiform diseased brain. Neuropathological surveillance of CJD brain tissue at Case Western University, Cleveland, Ohio, recorded a ten-fold increase in manganese and 50% reduction in copper in CJD brain tissue in relation to control brains.

Interestingly, BSE problems also seem to be associated with the addition of manganese in feeds which is common in all of the intensively farmed areas of Europe that have encountered endemic BSE problems to date. As for manganese added to the salt block/lick formulation, Purdey states that it *"involves a manganese dioxide that will chelate copper in the bio-system; thereby starve the supply of free copper in the CNS regardless of the level of input of copper entering the organism from the external environment."* In other words, this form of Mn supplementation is actually exacerbating Cu deficiencies.

Chemicals

What originally caught Purdey's eye and mind, was the overwhelming incidence in UK cattle which had been treated with a mandatory, extremely heavy dose (twice the rate normally used

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and twice per year) of the insecticide *Phosmet* in order to control the warble fly which lay their eggs in bovine skin causing health problems and reducing hide value. This potent *organo dithiophosphorus* (OP) insecticide, derived from OP military nerve agents, was placed down the animals' spine, from the base of the skull to the tail, to be absorbed systemically. Among its myriad toxicological effects, *dithiophosphate* can chelate copper thus opening up the blood brain barrier and disturbing the overall crucial balance of metals in the brain. Since Mn can then bond with the open Cu domains, it is obvious that high Mn/low Cu areas are at special risk when OP's are added to the equation.

One neuroscientist who worked with Purdey, Dr. Stephen Whatley of the University of London, found that when proteins were exposed to *Phosmet* they twisted into *prions* similar to that found in BSE brains but with only 3 of the 4 necessary changes. Dr. Whatley also found high levels of manganese and low copper levels in the soil and air in areas where outbreaks of BSE had occurred. More recently, David Brown, a researcher at Cambridge University performed experiments that incorporated these high Manganese and low Copper conditions and was able to reproduce all four protein changes in vitro, thus providing full laboratory confirmation that Purdey's theory is, at the very least, plausible and deserving of further study.

Purdey, along with other organic farmers, successfully sued the government for the right to ignore the *Phosmet* mandate with the result that no cattle from these organic farms contracted BSE. Other countries who are following suit with OP use as a systemic insecticide (Portugal, Spain, Italy, etc) are developing remarkably similar BSE challenges, while those countries who used far less amounts (France, Switzerland, Ireland, etc.), are encountering commensurately fewer BSE clusters. Additionally, as the mandated use of *Phosmet* decreased, so did the incidence of BSE and where it was newly introduced, BSE incidence rose.

Other Factors

OP's are not alone in their ability to sensitize the Mn toxic brain to the possibility of TSE. Purdey, and other researchers, have turned up many other potential factors that could stimulate their development including acid rain, volcanic emissions, lead-free gasoline production, emissions from steel, glass, ceramic, dye and munitions manufacturing and the take-off zones of major airports.

In Slovakia the two clusters of CJD are close to ferromanganese factories and glassworks which are heavy users of Manganese. On Groote Eylandt, an island north-east of Australia where 25% of the world's Manganese is currently produced, there is a progressive neurological disease known as Groote Syndrome which appears to be directly linked to high manganese levels. Purdey has also noticed the presence of phenomena that generate excessively high intensities of low frequency infrasound (eg; low flying military aircraft, quarry explosions, earthquake/volcanic activity) in all TSE clusters he has investigated to date.

A series of radioactive leaks from rusting barrels that stored plutonium contaminated oil at the Rocky Flats Plant in Colorado, combined with a fire, enabled plutonium and its daughter radionuclides to become airborne, contaminating a swath of the entire front range. Then overpopulation and three years of drought forced starving animals to graze on juniper and pine needles which bioconcentrate metals such as uranium, strontium and manganese to excessively high levels. This is the exact area where CWD is endemic in the deer and elk population. Purdey points out that certain species of ruminant, like the Pronghorn antelope, have evolved to conserve copper levels very efficiently; they have never succumbed to TSE despite roaming the same Front Range foothills around Fort Collins where CWD is so rife.

Purdey is now investigating whether ultra-violet light is an additional factor in the development of TSE diseases, perhaps in concert with a haze of *terpines* from the pine trees that often grow at high elevations. He hypothesizes that the eyes could act as a trigger, because of their concentration of nerves exposed to light. Japanese scientists at Kobe have taken Purdey's work seriously beaming manganese *prions* with near infrared light waves thus causing the *prions* to aggregate, forming the fibril structures so characteristic of the TSE diseased brain.

He also warns that occupational involvement with welding gear and steel mills not only involves exposure to manganese, but also involves chronic exposure to the intensive levels of the ultra violet and infrasound that are generated by the operation of the welder and the steel mills. Manganese-emitting volcanoes also radiate high intensities of infrasound as do earthquakes. It is well recognized that Mn can absorb both light and sound vibrations, undergoing atomic structural/magnetic modifications at the more intensive end of the exposure spectrum. In fact, a practical application of this phenomena comes from the music industry where trivalent manganese is used for storing sound vibrations on music tapes.

Summary

While organophosphate chemicals, infra-sound, and other exacerbating factors are certainly deleterious in and of themselves, it appears that it is the **toxic levels of inorganic manganese** coupled with **low levels of copper** that is the ultimate key to *prion* formation and the development of Mad Cow Disease and the other similar diseases. Purdey himself ensures that his soils remain high in copper, selenium and zinc which are all antioxidant minerals which unfortunately can be leached away with modern irrigation methods. Meanwhile, heavy industry spews inorganic manganese out into the atmosphere; other industry sprays it on crops, adds it to salt licks and uses in gas refineries. Purdey's work should have far-reaching ramifications in the use of manganese dioxide.

His work can also give us a new perspective on how to view various forms of both mental illness and degenerative neurological diseases including non-variant Creutzfeldt-Jakob Disease. Unfortunately, it is probable that governments and the scientific establishment itself will continue to concentrate their efforts almost exclusively on infectious agents and genetic defects, rather than investigating these mineral findings while suppressing anybody brave enough to argue against them on this or other health issues. The answers may just be too easy. As Purdey says, *"...too many professional reputations and vested interests in research were connected to the future viability of the official theory."*

Our perspective

We believe Purdey's research to be a wake-up call to pay more attention to the mineral balance of our soil, ourselves and our animals. ***DYNAMITE***® has long believed that health begins in the soil and has developed a line of organic, non-leaching, mineral-based fertilizers suitable for homes or farms: **Prescription Treatment** foliar sprays and **HumiZyme Rx** or **Plus** soil builders. Added to that, they also offer not only the various **Free Choice** Mineral powders in their Animal Programs, but also those vital antioxidant minerals spoken of above in their **SOD** available to supplement the Basic Programs for both animals and humans. And to help remove the system of toxic amounts of damaging metals, including inorganic Manganese, they are now offering a home chelation therapy program. As usual, ***DYNAMITE***® is on the cutting edge with significant, insightful, and holistic awareness.

Ultimately, we believe it is impossible to poison an organism to health and prefer to avoid as many toxins as possible. Our goal is to build immune systems naturally with appropriate food and supplementation. Perhaps this article will encourage others to also emphasize this perspective. ■