GLOBAL ISSUES SURROUNDING BSE

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Introduction

The history for the use of rendered animal proteins and fats for their beneficial and value added contributions to animal agriculture has been demonstrated many times in the over one hundred years of their continuous use. Animal co-products when processed into feed ingredients and other industrial uses are an integrated direct result of animal production. They are produced by the rendering industry and comprise a multi-billion dollar complementary and synergistic alliance with the production of food animals.

There however has not been a more profound challenge and reaction to a foreign animal disease outbreak as that experienced with the bovine spongiform encephalopathy (BSE) issue. The purpose of this paper is to discuss the various global ramifications that BSE has had primarily on political, consumerism, trade and science issues.

The BSE Disease

BSE and other transmissible spongiform encephalopathies (TSE's) belong to an unusual group of progressively degenerative neurological diseases. These diseases are characterized by an incubation period of several months to several years, during which there is no visible indication of the disease. The diseases included in this grouping are found both in animals and humans, namely; scrapie of sheep and goats, BSE of cattle, mink and feline encephalopathy, wasting disease of deer, elk and in humans, kuru, Creutzfeldt-Jakob disease (CJD), Gerstmann-Straussler-Sheinker syndrome and fatal familial insomnia. The incubation period for BSE among cattle ranges from three to eight years; for CJD among humans, it is approximately 13 years. Following a relative short clinical course of neurological signs, the disease is characterized by 100% mortality of its victims. There is no known treatment or cure.

Each of these diseases is diagnosed by the basic lesions which occur in the brain, and is characterized as a progressive vacuolation of neurons with a spongiform change in the gray matter. The diseases are associated with a transmissible agent, the nature of which is not yet fully understood nor is there consensus of its characterization. It is a highly stable agent, resisting heating to normal cooking temperatures such as those used for

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sterilization and drying. It is on this premise that a retrospective epidemiological evaluation developed the strong suggestion that changes in the rendering process within the United kingdom could have been a co-factor in the genesis of the disease in cattle. The other factor was the association of feeding bovine meat & bone meal processed from scrapie infected sheep and its subsequent feeding to cattle including calves. The association of scrapie to BSE incidence is less certain among many scientists as compared to a few years ago.

BSE manifests classic but not pathognomonic clinical signs of gradual onset in three primary categories: Changes in mental status (increased nervousness), change in sensation (hypersensitive to touch or sound) and changes in locomotion (lack of coordination). Signs that constitute a tentative diagnosis of BSE include attitudinal changes such as kicking or aggression, loss of body condition in spite of an appetite, increased sensitivity to light, excessive licking of the nose or other areas of the body, head pressing or rubbing, blindness, tremors, abnormal head carriage, falling, knuckling at the fetlock, recumbency and paralysis be it slight, partial or general. It is important for all stockmen, veterinarians and associates in contact with cattle to understand suggestive symptoms. However it must also be well understood that there are several central nervous system (CNS) diseases that are common to the bovine that exhibit similar signs and symptoms. The most common, but not intended to be a comprehensive list are: Rabies, Listeriosis, Pseudorabies (Aujeszky's Disease), Enterotoxemia, Thromboembolic Meningoencephalitis, and Polioencephalomacia. Also to be considered in the diagnosis of CNS symptomatic cattle are a number of physical and chemical (toxic) disorders. None of the listed diseases or conditions present histopathologic lesions similar to that described to be pathognomonic for BSE.

It is imperative that every suspect CNS bovine animal be thoroughly examined and their brains be histopathologically examined to rule out BSE. No evidence of BSE has been found in any U S cattle in spite of an increased surveillance effort. Surveillance efforts are continuing to be enhanced via several collaborative state, federal, practicing veterinarian and rendering industry programs that include the "downer cow" or non-ambulatory sector. Though non-ambulatory cattle have been implicated as a high risk sector of the cattle population for BSE diagnosis there has not been any scientific correlation to substantiate the inferences. The importance of using all surveillance and scientific resources to establish the United States and preferably North America to an undisputed BSE Free Status cannot be overstated.

Political

The emergence of BSE and the subsequent strong linkage to new variant form of CJD (nvCJD) has had global implications to all of agriculture. BSE was first identified in 1986 in Great Britain. Ten years later, the description of nvCJD, a related disease in humans,

was postulated to be casually linked to BSE in the UK. Throughout the decade, research and the scientific community struggled to provide answers to the many questions surfaced that threatened the cattle industry in the United Kingdom. Unfortunately fear and political pressures commanded greater influence than the scientific resources. During the past 11 years, there had been over 170,000 cases of confirmed BSE in over 34,000 herds in Great Britain. Nearly 60% of all dairy herds and 16% of beef suckler herds have been affected. Nearly 98% of all cases diagnosed in the world have been diagnosed in the United Kingdom, over 99% from U.K. origin cattle. The speculation that surrounds the cause of the original case and its amplification is still unknown. The fact that so many aspects of these perplexing diseases are still unclear impeded the development of clear solutions by animal health authorities and by the animal agricultural community as a whole. Thus regulations and directives have been common place on a country by country basis in response to specific needs internal interpretations and political pressures. In spite of international organizations such as the World Health Organization (WHO) and the World Organization for Animal Health attempts to define operating codes, conflicts in interpretation and implementation still exists. In May 1996 the Office of International Des Epizoites (OIE) revised codes that allowed for the unrestricted trading of milk, milk products, hides and semen from healthy cattle and properly processed by products such as gelatin, collagen and tallow from countries where BSE has occurred. Further codes defined the specific criteria for countries to be categorized as either 'free of BSE', 'low incidence of BSE', or 'high incidence of BSE'. Political interpretations of an effective, continuous surveillance program has varied by country and integrity challenges in reporting positive cases has been frequent impeding categorization. BSE has not been diagnosed within the boundaries of the United States following the establishment of a well defined surveillance program resulting in the examination of over 6,500 brains, a program not politically motivated but based on risk assessment principles. None the less the nature of the BSE with the concurrent inferences for food safety and human, animal health, FDA felt compelled to finalize regulations to provide a protective zone "fire wall" to the cattle industry that will ultimately contribute to the protection of public health. Politically, this is understood due to public reactions to media reports and concerns, heightening the subject to an "emotional" level that could not be ignored. Therefore the regulatory process initiated in the Unites States in May 1996 with the publishing of an Advanced Notice of Proposed Rule making and culminating in the publishing of the final rule on August 4, 1997. The rule was fully implemented on October 3, 1997 and incorporates labeling, record keeping and clean-out procedures as requirements for the use of ruminant derived mammalian tissues as feed ingredients. It further prohibits the feeding of tissues derived from mammalian protein to ruminants except for porcine and equine protein obtained from single - species slaughter plants. There are also exceptions from this prohibition for proteins derived from blood, milk, gelatin and processed meats. Fat, tallow, poultry and fish meals are not included in the rule and may be used in ruminant rations.

Consumerism

In March 1996 as the result of patient interviews and medical history, the United Kingdom Advisory Committee on Spongiform Encephalopathy concluded that "although there is no direct evidence of a link, on current data and in the absence of any credible alternative the most likely explanation for the diagnosis of 10 patients described as a new variant of CJD is that these cases are linked to exposure to BSE before the introduction of the Specified Bovine Offal ban in 1989". On March 20, 1996 the U.K. officially reported the cases and the conclusions in a press conference. This circumstantial and virtually nothing more than a most likely hypothesis had a depressing impact on cattle markets, including an immediate 21 - 25% reduction in beef sales and a concurrent collapse of a beef export market in Britain with an estimated annual equivalent of more than 780 million dollars. A concomitant loss of jobs at every level in the cattle and retail meat industries. Major users of beef such as McDonalds removed it from their menus. Confidence in the product dropped overnight not only in the U.K. but throughout the world. Beef consumption in the U.S. was temporarily affected with the encouragement from an over zealous media and "talk show" enthusiasts. Thus the effect of consumerism to the beef industry was visual. Beef producers, processors and marketers already in a defensive mode having seen their per capita consumption decrease from a peak of nearly 89 lbs. in 1976 to the mid 60 lbs. in 1996 understands the need to aggressively respond to consumer demands. It has been stated that a 1% change in U.S. beef consumption is reflected in a $500 million impact. In todays consumer oriented society food safety issues and more importantly the perceptions of food safety are paramount. Consumer perception will continue to be the decision maker. The BSE issues and the truths and myths that are communicated will continue to have a consumer impact not specifically to beef but to other meats as well.

Trade

The impact that BSE has had on trade both domestically and internationally can be defined as extremely negative. The implementation of mammalian tissue (porcine and equine exclusion) prohibition in ruminant diets developed a two-tier market for meat & bone meal. Pricing spreads of varying magnitudes have developed based on porcine derived meat & bone meal as compared to ruminant tissue containing meat & bone meal. The regulatory requirements such as labeling, record keeping and clean out procedures have increased costs to comply while other end users have elected to use only one source of product. The final rule does not exclude with the exception of meat & bone meal containing ruminant protein tissue any of the animal protein ingredients from use in ruminant rations provided the regulatory requirements are followed. In essence most of these requirements are no more demanding than many of those in place for feed additives. It is imperative that all of animal agriculture understood and comply with the newly published regulations.

International trade has likewise been negatively impacted via the BSE disease. There has been very little effect on trade among North American Countries. However European, trade issues remain in constant flux and uncertainty. The European Union composed of fifteen European countries for the purpose of processing common laws & policies for the benefit of trade have developed extreme differences of opinions. There is no consensus of common cause. In an attempt to develop common processing standards, seven of the fifteen countries cannot currently meet the recommended standards. A mission of marketplace protection and the prevention of one country developing an economic trade advantage supercedes the generation, evaluation and implementation of scientifically developed trade policies. Thus international trade has been affected for meat, fats (principally tallow), tallow derivatives and a number of co-products such as animal protein ingredients in general and gelatin. These issues are constantly changing and appear to be associated with a futuristic resolve.

Research

The world continues to grope to find scientific answers and interpretation to this most complex disease. As a historic precedent, science for the TSE complex is some 10 years behind the policy and regulatory process. Certainly the factors within each country varies and the interpretation of the scientific knowledge and risk assessment analyses will be different among reviews. It is difficult, if not impossible to research emotion and panic. Thus it has been very difficult to address research in respect to a disease as complex as BSE. The research is long term, extremely costly and has become emotional as well as political. North American researchers have long led the world in agriculture research and this must continue as the BSE issues are addressed. The initiatives must be shared as an overall animal agriculture industry responsibility. Utilization of meat as an important protein source for food actually differs little from the utilization of animal protein ingredients as viable efficacious feed ingredients. They both need to be safe.

But it is imperative that "safe" be defined in scientific terms acceptable to the consumer and should have identical meaning for all the world. This may not be politically possible or trade compatible but to do otherwise will establish a precedent that will haunt the regulatory process and World Trade Organization for years to come. In North America and other countries free of BSE, the objective is to take all needed precautions to prevent BSE from ever occurring in the countries and should it occur to have in place measures to prevent its amplification to other cattle and other species. The surveillance program, import restrictions and the FDA regulatory actions have all addressed that objective. In countries with the identified prevalence of BSE, they must be about the responsibility to eradicate the disease as soon as possible. It has been projected that this could be possible within the UK by the year 2000. Weekly confirmed cases continue to decline. Justly, the eradication process of scrapie and all other TSE animal diseases definitely diagnosed should receive similarly high priority in North America and throughout the world. The anecdotal inferences of possible but unproven transmissibility to man dictates this action.

Research needs and objectives have not been fully defined however inactivation of the causative agent(s) and the identification of procedures necessary to diagnose the diseases subclinically and antemortem have consistently been identified as priority. Efforts have been in existence to develop research coalition and alliances to pursue the necessary research initiatives. These efforts continue and are processing towards a Global TSE Research Coalition. Every segment of animal agriculture must assume a responsibility.

Summary

Collectively, TSE diseases have challenged the scientific community by presenting non-traditional facets of previously described diseases and their causes. The amplification of the BSE epidemic in the UK re-focused an immense amount of attention from all points on the globe. This attention involved numerous effects that the disease influenced that included political, consumer, trade issues and the tremendous need for research and scientific answers. The United States has addressed these challenges in many ways to include the development of regulatory actions that involved an eighteen month process. Throughout this process the US from all indications remain BSE free and risk assessment studies indicate that its occurrence and/or amplification is extremely low. This in no way implies that the BSE issue is resolved but due to its importance to all of animal agriculture it should receive the full attention of all of its industry segments.

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