

Bovine Spongiform Encephalopathy (BSE)



Bovine Spongiform Encephalopathy (BSE) is a transmissible, neurodegenerative, fatal brain disease of cattle. The disease has a long incubation period of four to five years, but ultimately is fatal for cattle within weeks to months of its onset. BSE first came to the attention of in 1986 with the appearance in cattle of a newly-recognized form of neurological disease in the United Kingdom (UK).

Epidemiological studies suggest that the source of BSE was cattle feed prepared from bovine tissues, such as brain and spinal cord, which was contaminated by the BSE agent.

Speculation as to the cause of the appearance of the agent causing the disease has ranged from spontaneous occurrence in cattle, the carcasses of which then entered the cattle food chain, to entry into the cattle food chain from the carcasses of sheep with a similar disease, scrapie.

BSE in the brain affects the brain and spinal cord of cattle. Lesions are characterized by sponge-like changes visible with an ordinary microscope.

The agent is highly stable, resisting freezing, drying and heating at normal cooking temperatures, even those used for pasteurization and sterilization.

The nature of the BSE agent is still a matter of debate. According to the prion theory, the agent is composed largely, if not entirely, of a self-replicating protein, referred to as a prion. Another theory argues that the agent is virus-like and possesses nucleic acids which carry genetic information. Strong evidence collected over the past decade supports the prion theory, but the ability of the BSE agent to form multiple strains is more easily explained by a virus-like agent.

Cattle are continuously monitored for BSE and therefore BSE is decreasing. New monitoring programmes using newly developed tests for the diagnosis of BSE in dead and slaughtered cattle have been introduced throughout the EU.



CediTect BSE Test

Cedi Diagnostics developed the CediTect[®] BSE test, which is a filter chemiluminescence immunoassay to detect BSE in cattle and scrapie in sheep. The test uses a method that compensates for incorrect homogenization and/or improper digestion for each individual sample. It has been shown by researchers that brain stem homogenates of BSE positive cattle (or scrapie positive sheep) show a remarkable increase in immunochemical response upon treatment with a chaotropic agent (T), whereas BSE (scrapie) negative samples show no increase of signal when treated with a chaotropic agent. The non-treated sample (N) of the homogenate acts as an internal control indicative of the quality of homogenization and subsequent digestion.



The quality system of Cedi-Diagnostics is ISO 9001:2000 approved. The CediTect[®] BSE test has been approved by the EU.

Sample preparation

The first steps of sample preparation are homogenisation and digestion. Then, for the immunodetection procedure, the samples are transferred to the PVDF filter plates. After the chaotropic treatment and conjugate incubation, the microplates are read on the BERTHOLD Centro LB 960 microplate luminometer with injectors.



More information

www.cedi-diagnostics.com

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With this abstract BERTHOLD TECHNOLOGIES likes to give a short introduction and some information about available kits. BERTHOLD TECHNOLOGIES will not be in no way responsible for the validity of information given on these pages.