



Australian Government
National Measurement
Institute

NATIONAL MEASUREMENT INSTITUTE FACT SHEET

STOCKFEED

THE CHALLENGE

'Mad cow disease' (or bovine spongiform encephalopathy, BSE) is a fatal disease affecting the brains and spinal cords of cattle. It has been linked to Creutzfeldt-Jakob disease, which is fatal to humans. In 1996, the World Health Organization recommended that meat and bone meal (MBM) from ruminants be excluded from ruminant feeds because MBM was implicated in the spread of BSE.

Australia is in the lowest risk category for having cattle infected with BSE. To maintain this status, Australia must be able to monitor and audit for animal-derived tissue in stockfeed. However, MBM is rendered (highly processed), making it difficult to develop robust techniques to detect ruminant tissue.

No single test is available that meets all national and international regulatory requirements. Traditional microscopy is labour intensive and has limited capacity to distinguish between animal species. Protein-based methods are tissue specific rather than species specific, and must be capable of detecting heat-stable proteins. DNA-based methods have the potential to be species specific but must be able to detect the very small fragments of DNA that remain after the rendering process.

NMI'S RESPONSE

With funding assistance from Meat and Livestock Australia, NMI developed and validated a method for detecting ruminant tissue in stockfeed in proportions as low as 0.5% by weight. We overcame the problem of detecting DNA in highly rendered MBM by designing an assay that targets a very short DNA fragment that is similar in all ruminant species. NMI offers this method for detecting MBM in imported and domestic stockfeed. Two stockfeed reference materials have been prepared at NMI and are used in routine analysis to monitor the ongoing performance and reproducibility of the method.

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