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Assessment of morinaga ELISA Kit Ver.2 detecting bovine protein in feed analysis

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Abstract After the detection of the first case of bovine spongiform encephalopathy (BSE) in 2001, the use of animal protein for production of animal feed was prohibited in Japan. However, since April 2005 the use of meat and bone meal (MBM) of pig origin (pork MBM) and MBM of pig and chicken origin (pork and chicken MBM) has been allowed for the production of some animal feeds. The Food and Agricultural Materials Inspection Center (FAMIC) is engaged in the analysis of feed samples for presence of animal protein using three methods: polymerase chain reaction (PCR) method that detects animal derived DNA; microscopic method that detects MBM directly; and enzyme linked immunosorbent assay (ELISA) methods that detect animal derived protein. Two commercially available ELISA kits: Morinaga ELISA kit against a heat-treated bovine protein (Morinaga Institute of Biological Science, Inc.); and MELISA-TEK RUMINANT KIT for meat-and-bone meal and animal feed (ELISA Technologies, Inc.) were established by Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF). Considering the fact that the use of these ELISA kit is limited by each reaction to feed materials, an ELISA kit that is capable of detecting bovine MBM only was required. We assessed Morinaga kit Ver.2, a commercially available ELISA kit that is claimed to be capable of detecting only bovine protein. Specificity of Morinaga kit Ver.2 was assessed by testing 3 formula feed and 59 feed materials. This ELISA kit showed the high specificity against bovine protein. This ELISA kit detected bovine MBM contained 0.1% in formula feed and feed materials. A collaborative study was conducted in 11 laboratories using formula feed, formula feed contained 20% dried skim milk, fish meal, pork and chicken MBM and pork MBM containing bovine MBM. All laboratories detected bovine MBM contained 0.1% in these feed samples. In 2011, this kit was adopted to official method of feed analysis in Japan.

Keywords ELISA;BSE;meat and bone meal;animal protein;bovine protein;animal feed