

P.43.- Validation study for the detection limit of Enzyme-Linked ImmunoSorbent Assay (ELISA) with heated meat and bone meal as an effective prophylactic method for Bovine Spongiform Encephalopathy (BSE)

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It has been widely accepted that the causative agent of Bovine Spongiform Encephalopathy (BSE) is inactivated when the animal materials are treated at 133° with 3 bar under wet sterilization condition for 20 minutes (Anon, 1997). A commercially available ELISA test kit for the identification of cooked animal species (Tepnel Co.) and for meat, bone meals and animal feeds (MELISA-TEK, ELISA-TEK) has been used and compared in the current study. R-value for the formulated feed containing 1% of heat-treated Korean native cattle meat meal was 1.28 indicating low detection capacity whereas it was 2.69 and positive with 1% of heat-treated dairy cattle meat meal. R-value for the formulated feed containing 1% of heat-treated pork meat meal was 1.42~1.57 indicating quite low detection level and it was 2.15~2.28 with positive test result with 1% of heat-treated poultry meat meal using ELISA. When land animal meat was heat-treated without pressure and tested for the contamination using commercially available ELISA kits in beef, pork and poultry was 15.7, 6.84 and 12.95, respectively with A kit and 10.27, 16.51 and 8.22 with B kit, respectively. It appears that detection limit of the assay using known concentration of meat and bone meal for beef, pork and poultry was 0.5, 0.1 and 0.1%, respectively. In conclusion, when known concentration of meat and bone meal, heat-treated and pressurized was used for formulated feed and tested for the contamination using commercially available ELISA kit detection limit appeared to be about 1%, whereas when meat and bone meal, heat-treated without pressure, was added to formulated-feed and tested for the contamination then the limitation of detection for beef, pork and poultry was 0.5, 0.1 and 0.1%, respectively.

Keywords

Enzyme-Linked ImmunoSorbent Assay, ELISA, heated meat and bone meal, Bovine Spongiform Encephalopathy, BSE, contamination, monitoring