Veterinary Medicine /Feed Additive Evaluation Report for Colistin

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Food Safety Commission

Summary

The health risk of colistin, a polymyxin antibiotic used as a feed additive and in the treatment of bacterial diarrhea in cows and pigs, was evaluated.

The study results for evaluation included administration (rabbits, chickens, dogs, pigs, cows, and humans), residues (cows, pigs, chickens, turkeys, rabbits, milk, and chicken eggs), acute toxicity (mice), subchronic toxicity (rats and dogs), developmental toxicity (rats), genotoxicity, and microbiological effects.

Results showed no effect on reproductive ability, developmental toxicity or genotoxicity for colistin. The European Medicines Evaluation Agency (EMEA) has reported that colistin sulphate has no structural property related to carcinogenicity, and the Joint FAO/WHO Expert Committee on Food Additives (JECFA) has also reported that colistin has no significant genotoxic activity and is not chemically related to known carcinogens, and genotoxicity tests gave negative results. Considering these reports, it was determined that no carcinogenicity study was needed for colistin.

EMEA uses 12.5 mg/kg bw/day obtained in a 26-week subchronic toxicity study using rats as the minimum value of no observed adverse effect level (NOAEL) among toxicity studies and the acceptable daily intake (ADI) was determined as 0.0625 mg/kg bw/day by applying a safety factor (200) to the minimum NOAEL. JECFA determined ADI as 0.5 mg/kg bw/day by applying a safety factor (100) to NOAEL (50.5 mg/kg) obtained in a 26-week subchronic toxicity study using rats. The microbiological ADI was established as 0.004 mg/kg bw/day calculated with the equation presented in the International Cooperation on Harmonization of Technical Requirements for Registration of Veterinary Medicinal Products (VICH) guideline, which has gained an international consensus at present. This microbiological ADI would well assure the safety of colistin in food when colistin is used as a veterinary medicinal product and a feed additive.

From these results, ADI was established to be 0.004 mg/kg bw/day in the health risk evaluation for colistin.