

Determination of trimethoprim in livestock and fishery products with UPLC-ESI-MS/MS

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Trimethoprim is used as broad-spectrum antibacterial compounds, which acts as a dihydrofolate reductase inhibitor. It is an anti-infective agent used predominantly in the treatment of urinary and respiratory tract infections and often used in combination with sulfonamides. Improper administration without observing the withdrawal time for treated animals could result in antibiotic residues in animal origin foods and induction of antibiotic resistance in bacteria, which might be attributed to the overuse of antimicrobials in human medicine. With an increase in the consumption of animal food products and decrease in the MRLs values of antibiotics in recent years, the sensitive and specific analytical method is required for food safety. In this study, the specific and simple analytical method was developed to analyze the determination of trimethoprim in livestock (beef, pork, chicken, milk, and eggs) and fishery products (flatfish, jacobever, common eels, and shrimp). This method involves a liquid-liquid extraction and a step of solid-phase extraction to pre-concentrate and clean up extracts; the analytes were extracted with acetonitrile and purified by Oasis HLB cartridge. The residue was dried under nitrogen and dissolved in mobile phase before injection in to UPLC-ESI-MS/MS. The proposed method was validated according to the FDA guidelines and excellent validation parameters were acquired. The method was linearly calibrated from 5 to 200 ng/ml, and the correlation coefficient of calibration curve was 0.999. The recovery ranged from 71.2 to 100.4% and the limit of detection and quantification were 0.1 ng/ml and 0.4 ng/ml, respectively. This developed method would take many advantages including simple preparation step, rapid determination, and high sensitivity and specification for determination of trimethoprim residues in animal origin products. The results were achieved in 80 fishery products purchased from the major cities in Korea. 2 samples yielded a positive screening results, which was lower than Maximum residue limits (MRLs).

Biography

Jin-wook Jang specilized in veterinary medicine and got a veterinarian license at 27 years old. She has completed her master's degree at the age of 29 years from Seoul National University School of veterinary medicine. She is currently serving as scientific researcher at KFDA (Korea Food and Drug Administration) and responsible for analyzing the veterinary drug residue in food stuff.

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