

## Extraction and Enzyme Immunoassay of Sulfadimethoxine Residues in Channel Catfish Muscle

Calvin Walker and Steven Barker

*The Laboratory for Residue Studies,  
Department of Veterinary Physiology, Pharmacology and Toxicology,  
School of Veterinary Medicine,  
Louisiana State University,  
Baton Rouge,  
Louisiana,  
70803,  
USA*

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### ABSTRACT

Three enzyme immunoassay tests were evaluated for the detection of sulfadimethoxine (SDM) residues in catfish muscle. Catfish muscle samples (0.5 g; n = 60) fortified with SDM at 0, 25, 50, 100 and 250 ppb were extracted using matrix solid phase dispersion (MSPD). The extract (500 µL) was used in all tests. The SIGNAL<sup>R</sup> Sulfamethazine Detection Test cross reacted with SDM and was quantitative for SDM at concentrations of 25 to 250 ppb when using a colour absorbance reader (630 nm). A decision point for determination of SDM residues of 100 ppb or more was obtained using the upper end of the 99% CI for 100 ppb extracts. Sensitivity was 95.8%, specificity 100%, efficiency is 97.9%, predictive value (positive) was 100%, predictive value (negative) was 96.0%. Recovery was 95.8%. The least detectable concentration was 23 ppb. Intraassay and interassay variation were 5.63% and 7.89%, respectively. Eight sulfonamides cross-reacted at various concentrations. The lowest concentration causing a 50% inhibition in colour development (IC<sub>50</sub>) was shown by sulfamethazine (<100 ppb), sulfamerazine (<100 ppb) and SDM (215 ppb). N-acetyl SDM extracted, and reacted in the SIGNAL<sup>R</sup> test, identical to parent SDM. The CITE<sup>R</sup> Sulpha Trio<sup>TM</sup> and EZ-SCREEN<sup>R</sup>:SDM assays are membrane ELISA tests that visually compare the relative colour intensity of a control and a sample spot. CITE<sup>R</sup> sensitivity was 98.0%, specificity was 69.6%, predictive value (positive) was 70.4% and (negative) was 98.0%, efficiency was 81.7%. N-acetyl SDM reacted like the parent SDM. No cross-reactivity with other compounds was seen. EZ-SCREEN<sup>R</sup> sensitivity was 97.9%, specificity was 94.4%, predictive values (positive) and (negative) were 92.2% and 98.6%, respectively. Efficiency was 95.8%.