

Thanit Saengtienchai 2014: Studies on Toxicokinetics and Tissue Residues of Fusarenon-X and Its Metabolites in Piglets. Master of Science (Veterinary Pharmacology and Toxicology), Major Field: Veterinary Pharmacology and Toxicology, Department of Pharmacology. Thesis Advisor: Associate Professor Amnart Poapolathep, Ph.D. 64 pages.

Fusarenon-X (FX) is one of the type B trichothecene mycotoxin mainly produced by *Fusarium crookwellense*, which naturally occurs in agricultural commodities such as wheat and barley. The toxicokinetic characteristics of mycotoxins especially FX is needed to evaluate because a limited toxicokinetic data are available in food producing animals. To investigate the toxicokinetics of Fusarenon-X (FX) and its metabolites (nivalenol, NIV), FX was administered intravenously (iv) and orally (po) to piglets at a dosage of 1 mg/kg body weight. The concentrations of FX and NIV in plasma, excreta and various tissues were measured simultaneously using LC-MS/MS with electrospray ionization. The plasma concentrations of FX were determined up to 24 h and 48 h in piglets whereas the NIV was detected up to 12 h after iv and po administration, respectively. The plasma concentration at initial time ( $C_p^0$ ), elimination half life ( $t_{1/2\beta}$ ), oral bioavailability ( $F_{oral}$ ) of FX were  $580.28 \pm 140.81$  ng/ml,  $1.706 \pm 0.741$  h, and  $74.402 \pm 18.96\%$  after iv administration, respectively. FX and NIV can be detected in the urine and feces for up to 24 h and 48 h after iv administration and po administration, respectively. FX and NIV were detectable in vital organs up to 24 h after po administration. The peak level of FX in liver, kidney, and spleen were  $16.95 \pm 9.68$  ng/g,  $66.29 \pm 8.48$  ng/g, and  $7.35 \pm 0.69$  ng/g after 3 h following po administration, respectively. *In vitro* incubation of liver postmitochondrial fractions with FX demonstrated that the liver and kidney are capable of the FX-to-NIV metabolism.

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