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ESTIMATION OF RACTOPAMINE RESIDUES IN MEAT AND BONE MEAL SAMPLES FED TO SWINE THROUGH SPE-LC-MS/MS

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ABSTRACT

Ractopamine (RAC) is classified as a β-adrenergic agonist used in feed, acting as a repartitioning agent, redirecting nutrients from adipose tissue to muscle deposition. Its use has obtained regulatory approval as a growth-promoting feed additive for swine and cattle in more than 80 countries. However, RAC is not authorized in the European Union and China as a growth promoter for animals while some markets are still cautious and restrict its use. Although most research relies on RAC in swine urine, due to the pharmacokinetics of this drug, much has still to be studied regarding RAC deposition in tissues and co-products as meat and bone meal (MBM) used as feed ingredient. This study was carried out to estimate RAC residues in swine tissue by feeding swine with traditional diet supplemented with RAC (maximum 20 $mg.kg^{-1}$) 28 days before slaughter in comparison with diets containing 8% MBM during lifetime, as preconized by literature. For MBM residues analysis, SPE-LC-MS/MS was used. Assuming that 88% of RAC is eliminated via urine and 8% via feces, 4% is likely to remain in body tissues. Therefore, the estimated results for conventional diet showed an accumulated consumption of 70 mg over 87.6 kg of feed during 28 days supplementation period. On the other hand, our results showed RAC concentration in MBM varying from 6.3 to 38.7 $\mu g.kg^{-1}$. Considering that a pig lives 178 days and 8% MBM was administered all life, an animal may have 6.5 to 40.2 µg of RAC residues in its body. To conclude, feeding a diet supplemented with 8% MBM will provide low levels of RAC in body tissues. Nevertheless, considering restricted markets, MBM diet does not guarantee absence of RAC residues.

Keywords: Diets, tissues, liquid chromatography mass spectrometry.