DEPLETION OF RACTOPAMINE RESIDUES DURING AND AFTER SWINE SLAUGHTERING

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Abstract

Ractopamine (RAC) is an additive fed to swines 28 days prior slaughtering in many countries including Brazil. RAC improves weight gain and feed efficiency, increasing muscle deposition and decreasing fat content. Some markets restrict while others forbid RAC use. Studies demonstrated that 88% of RAC residues are eliminated through urine after it has been metabolized in the body. Most researches with RAC residues are conducted in the United States, where most of the additive companies are headquartered, or in China, where RAC is most contested. This survey was undertaken in order to show the depletion of RAC residues based on articles published in different literature around the world. Most countries establish that RAC may be added to feed at a maximum dose of 20 $mg.kg^{-1}$ with no withdrawal period prior to slaughter. The Brazilian Ministry of Agriculture follows the maximum limits of RAC residues established by the *Codex Alimentarius* in fat and muscle (10 $\mu g.kg^{-1}$), liver (40 $\mu g.kg^{-1}$) and kidney (90 $\mu g.kg^{-1}$). Besides these matrices, others as small and large intestine, stomach, heart, lungs and serum are evaluated by other countries. Usually gas or liquid chromatography coupled to mass spectrometry are commonly available methods for ractopamine analysis in a variety of matrices. The survey showed that during RAC supplementation swine are prone to have up to 650 ppb of RAC residues in urine. On the other hand, in the first day after RAC withdrawal from feed, no residues were found in muscle, fat or serum. However, concentrations found in the first day after withdrawal were respectively 47, 15 and 8 ppb in urine, kidney and liver, decreasing to 0.5, 1.6 and 0.33 ppb in the ninth day after withdrawal. In conclusion, meat and fat are not the main tissues for RAC monitoring. Illegal use of RAC may be confirmed through urine and kidney analysis up to 14 days after RAC withdrawal from the feed.

Keywords: Feed, tissues, liquid chromatography mass spectrometry.