DETERMINATION OF IONOPHORE ANTIBIOTICS IN FOOD ANIMALS BY THIN-LAYER CHROMATOGRAPHY METHOD

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INTRODUCTION

Ionophore antibiotics are widely used in veterinary medicine as anticoccidial drugs for poultry and as growth promoters for farm animals. The ionophores, despite their utility, possess a narrow range of safety; several species (horses in particular) appear highly susceptible to the toxic effects of these compounds, compared to other animal species. Thin layer chromatography method is more sensitive, economic and exact for monitoring low amounts of different chemical compounds.

The purpose of this study was to apply a thin layer chromatography (TLC) method to identify ionophore antibiotic residues in feeds according to harmonized protocols (FA VII).

MATERIALS AND METHODS

Feed sample extracts were obtained using acetone. Samples were homogenized with vortex and centrifuged. The clear supernatant obtained was transferred to a fresh glass tube (S1). The frame was extracted with acetone again, and the second supernatant (S2) was combined with the first one and evaporated. After full drying, the residue was redisolved in 1 ml of acetone for TLC analysis.

The standards provided by DSM Nutritional Products Argentina SA were dissolved in acetone. TLC method was carried out according to the FAVII Ed technique. About 20 µL of the extract were pointed on silica plates (Silica gel 60 F-254 0.2 mm). Treated plates were transferred to a TLC tank containing 99% ethyl acetate as mobile phase. Chromatograms were observed on UV light at 366 nm and with sulfuric anisaldehyde.

RESULTS

The table below shows the different retention factors (Rf), the fluorescence obtained with UV light and finally the results obtained after being revealed by sulfuric anisaldehyde.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Rf</th>
<th>Fluorescence</th>
<th>p-anisaldehyde</th>
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<tbody>
<tr>
<td>Monensin</td>
<td>0.77</td>
<td>blue</td>
<td>yellow</td>
</tr>
<tr>
<td>Virginiamycin</td>
<td>0.55</td>
<td>blue violet</td>
<td>yellow-brown</td>
</tr>
<tr>
<td>Maduramicin</td>
<td>0.88</td>
<td>blue</td>
<td>pink</td>
</tr>
<tr>
<td>Lasalocid</td>
<td>0.97</td>
<td>violet sky</td>
<td>black</td>
</tr>
</tbody>
</table>

CONCLUSIONS

Different authors reported some techniques for extracting the ionophore antibiotics (Tomassen MJH, et al, 2004) (CT Elliott et al, 1998) (D. Guglielmo et al, 1999). Acetone was selected because it had been the only solvent drawing all the antibiotics in the same method with high reproducibility for the different samples assayed.

Thin layer chromatography is a simple non expensive and exact technique which can be easily performed in most laboratories. Among chromatographic techniques HPLC is more accurate but it has some limitations. For direct investigation of residues in poultry feed TLC is a low cost, fast and accurate technique able to analyze at least 10 samples at the same time.

REFERENCES

- FA VII ed. primer tomo.