

ABSTRACT

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Title of Diploma Thesis: **The determination of anticoccidials in chicken meat using QuEChERS and HPLC**

This diploma thesis is focused on the development of modified QuEChERS method in conjunction with HPLC and UV detection for the determination of five selected anticoccidials - flubendazole, robenidine, diclazuril, toltrazuril and lasalocid A in chicken meat.

This thesis deals with the optimization of chromatographic conditions - selection of a suitable stationary and mobile phases, and a suitable wavelength for the UV detection and also deals with optimization of sample preparation using the modified QuEChERS method. At the end of the thesis the method has been partially validated - repeatability, precision, accuracy, linearity, and other parameters were evaluated.

For the separation was chosen Ascentis Express Phenyl Hexyl column (4.6 x 100 mm, 2.7 micron), and as the mobile phase after a series of experiments was chosen 0.1% formic acid pH 4 (pH adjusted with triethylamine) with acetonitrile (50:50, v/v).

Finally, the test of suitability of the chromatographic system (SST) was performed and the following parameters were measured: repeatability of the analysis (RSD for reproducibility of retention times of <1%, the repeatability of the peak areas was RSD from 0.23% to 1.04%); resolution (> 1.5); symmetry factor (0.8 - 1.5) and the number of the theoretical plate for each analyte. As a next step a partial validation of the method has been done including: precision (RSD in the range of 4.80 -13.27%); accuracy (RSD in the range of 1.43% - 6.62%); linearity ($r^2 > 0.99$) and detection and quantification limits (LOQ = 50 to 400 $\mu\text{g}/\text{kg}$, LOD = 15.15 – 121.21 $\mu\text{g}/\text{kg}$).

Keywords: flubendazole, robenidine, diclazuril, toltrazuril lasalocid, QuEChERS, HPLC, anticoccidials