DETECTION OF MACROLIDS ANTIBIOTICS IN HONEY

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Introduction. Macrolides, like other veterinary drugs, are used in agriculture to prevent and control diseases of cultivated plants and by beekeepers to prevent and control diseases in bees. Consequently, it is possible that the antibiotic residues in the honey got there as a result of the treatment of diseases for example American Foulbrood caused by Paenibacillus larvae and European Foulbrood caused by Melissococcus pluton.

Goal. The aim of the study was to determine Spiramycin, Tilmicosin, Erythromycin, Tylosin, Josamycin, Tulathromycin A, Tilvalosin, Oleandromicin, Desmycosin, Gamithromycin in honey by liquid chromatography coupled with mass spectrometry.

Methods. 12 honey samples purchased from the market were analyzed by LC/MS/MS spectrometer 1260/1290 Infinity II, 6470 LC/TQ. Sample preparation for the LC/MS/MS analysis includes honey centrifugation with the addition of 10ml McIlvaine buffer for 15 min at 4500rpm, supernatant filtration and purification on Strata x cartridges. Calibration curve was prepared with blank samples which were fortified with a standard solution mixture for the 10 macrolids.

Results. According to the Council Directive 2001/110/EC of 20 December 2001 annex II, relating to honey, it must be free from organic or inorganic matters foreign to its composition. To achieve the provisions of the directive, the method for detecting macrolides in honey was validated according to the requirements of the documents in force and the limits of detection and quantification (LOD, LOQ) were obtained. Detection limits are from 2.7 ppb to 3.6 ppb, quantification limits from 8.2 ppb to 9.3 ppb.

Conclusion. Following the laboratory research of 12 honey samples, the macrolides Josamycin, Tulathromycin A, Tilvalosin, Oleandromicin, Desmycosin, Gamithromycin were below the LOD, and Spiramycin, Tilmicosin, Erythromycin, Tylosin above the LOD but below the LOQ.