Aim. To develop sensitive, specific, also simple and accessible methods for Vortioxetine detection suitable for the purposes of chemical-toxicological analysis.

Materials and methods. Chromatographic mobility of *the antidepressant* in thin sorbent layers was studied in 12 mobile phases including those recommended by The International Association of Forensic Toxicologists (TIAFT) for TLC drug screening using Merk chromatographic plate. Mandelin's, Marqui's, Froehde, Lieberman, Erdman reagents, concentrated sulphuric, nitric, hydrochloric, perchloric, phosphoric and acetic acids were used as chromogenic reagents.

Results and discussion. The mobile phases of toluene – acetone – ethanol –25 % ammonia (45:45:7.5:2.5) (R_f = 0.37) and chloroform – dioxane – acetone – 25 % ammonia (47.5:45:5:2.5) (R_f = 0.45) were the most suitable for Vortioxetine identification. UV light (λ_{254}) (violet fluorescence, sensitivity was of 1.0 μg in the sample) and Dragendorff reagent with Munier modification (orange spots on the yellow background, sensitivity was of 1.0 μg in the sample) were used for visualization. The products of Vortioxetine interaction with the range of chromogenic reagents were of selective colour relating the endogenous biological matrix components. They were nitrate acid (lemon-yellow colour, sensitivity was of 5.0 μg), Froehde reagent (yellow colour turned into green, and then into blue, sensitivity was of 3.0 μg), Mandelin's reagent (green colour turned into blue, and then into brown, sensitivity was of 2.0 μg). Vortioxetine did not form the coloured products with Marqui's and Erdman reagents, hydrochloric, phosphoric and acetic acids.

Conclusions. Two mobile phases and four selective chromogenic reagents suitable for Vortioxetine detection in toxicological screening have been established. According to the TIAFT recommendations about the reliable identification of toxic substances in TLC-screening the acceptable condition is to use at least 2-3 mobile phases and four reagents on the same chromatographic plate consequentially.

METHOD OF DETERMINATION PYRETHROIDS IN ANIMAL ORIGIN OF OBJECTS

Dotsenko R. V.
Scientific supervisor: prof. Kutsan O. T.
National University of Pharmacy, Kharkiv, Ukraine
romdtox@ukr.net

Introduction. Today, pyrethroids are one of the most common pesticide groups. These are relatively new pesticides that have high insecticidal activity with pronounced selectivity. The selectivity of their actions is much higher than in most other drugs.

Aim. The aim of the work was to determine the optimum conditions for determining the residual amounts of pyrethroids in products of animal origin by means of gas-liquid chromatography.

Materials and methods. In the development of the method for determining the residual quantities of pyrethroids, standard pesticide solutions were used. To identify bifentrine, a gas chromatograph with an electron capture detector was used.

Results and discussion. At the first stage of determining the residual quantities of pyrethroids, the main task was to achieve maximum removal of the pyrethroid from the matrix. Experimentally testing such extragrants and their mixtures as acetone, chloroform, benzene, hexane, ethyl alcohol found that the best extractant of different chemical composition of the matrices is acetone. But when using acetone to remove a pesticide from a matrix, organic compounds such as fat, lipids, carotenoids, and the like also pass through it. Therefore, at the second stage, the extract had to be released from these undesirable compounds. The best way was to freeze with the addition of distilled water to the acetone extract. The optimum freezing time is one hour. The remainder is separated by filtration through a cotton filter.

Re-extraction was performed twice to completely redistribute the drug to hexane, using 10 and 15 cm^3 of extractant. Chromatographic columns were used to completely purify the extract, and bifentrine was eluted with hexane. The purified extract was analyzed on a gas chromatograph. The detection limit (LOD) is 1.4 ng, the limit of determination according to this procedure is 0.02 mg/kg.

Conclusions. When developing the method for determining bifentrine, it was established that the optimal conditions for extracting pyrethroid from the matrix are acetone extraction, precipitation of co-extracts from a water-acetone solution by freezing for one hour, redistribution in hexane, and purification of the extract on a chromatographic column.