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ANALYSIS OF POLYCYCLIC AROMATIC HYDROCARBONS IN SOIL, WATER, PLANT PRODUCTS

The method of research of xenobiotics of polycyclic aromatic hydrocarbons (PAHs) group in agricultural objects: soil, water, plant products is developed and tested in the work. The method was developed using model systems and laboratory samples taken from the research farm "Snitynka". Optimal modes of measurement of xenobiotics were established for the method of high-performance liquid chromatography with a fluorescent detector (HPLC / FLD) in the analysis of compounds: benzo (a) anthracene, benzo (a) pyrene, benzo (e) pyrene, benzo (b) fluoranthene, chrysene and their mixtures. The metrological characteristics of the PAH measurement method are established: the limit of quantitative analysis, the limit of detection, the stability of the results and the measurement error for each of the xenobiotics. The approbation of the methodology and statistical calculation of the results of laboratory control were carried out. It is established that the developed method allows to unify laboratory control of PAH and improves the process of monitoring analysis of xenobiotics.

Soil, atmospheric and reservoir water, sunflower seeds and oil samples were used. As well as model systems of all these samples, which were enriched with xenobiotics of the PAH group. The xenobiotics were extracted with maceration, intensified by constant stirring at a speed of 200 revolutions per minute. Qualification solvents "for chromatography" and "clean for analysis" were used in the work: methylene chloride, acetone, methanol, isopropanol, acetonitrile, deionized water, orthophosphoric acid, solutions of analytical PAH standards in acetonitrile and isopropanol. Determination of the content of xenobiotics in the extract was performed by high performance liquid chromatography with fluorescence detection (HPLC / FLD).

In the structural unit of NUBiP of Ukraine, the effect of extraction conditions was investigated, which made it possible to exclude compounds (benzo (a) anthracene, chrysene, benzo (a) pyrene, benzo (f) pyrene, benzo (b) fluoranthene) from the sample and carry out their measurements to establish safety sunflower seeds and oils. Extraction of xenobiotics from soil, water, seeds, and oil samples under laboratory conditions can be obtained by different methods.

Hence, the technique for measuring the PAH substance in soils, water, seeds and sunflower oil, created and tried in inquire about, gives an investigation of the list of five compounds of the PAH bunch. The application of this strategy could be a helpful device in checking ponders of PAHs; the unification of the test arrangement strategy diminishes the term of the examination in common. Due to the application of the strategy of solid-phase extraction of xenobiotics (SPE), an increment within the selectivity of the strategy was accomplished; estimations were carried out by chromatographic investigation with a fluorescent finder with an mistake not surpassing 20%.

Referenses

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