The aim to this work was to develop methods for the determination of 2 aminobiphenyl (2-AB), 3 aminobiphenyl (3-AB), and 4-aminobiphenyl (4-AB) in model mixtures. Concretely, the direct determination of the mixture of studied analytes has been tested using spectrophotometry and differential pulse voltammetry (DPV). Furthermore, separation and detection of 2-AB, 3-AB, and 4-AB have been performed using high performance liquid chromatography with electrochemical detection (HPLC-ED) with boron-doped diamond film thin electrode (BDDFE) in „wall-jet“ configuration and using high performance liquid chromatography with UV detection (HPLC-UVD).

It was found out that the spectrophotometric determination of 2-AB, 3-AB, and 4-AB is impossible in their mixture because of nearby values of local absorption maxima wavelengths of all three analytes studied. Upon the determination of 2-AB, 3-AB, and 4-AB in their mixture using DPV in BR buffer pH 2.0, the difference in peak potentials of 2-AB and 3-AB is too low for their determination in mixture. Upon the determination of mixture containing 2-AB and 4-AB in BR buffer pH 12.0, the limits of determination (LDs) were obtained in the concentration order of 10–6 mol.l–1 for 2-AB and 10–7 mol.l–1 for 4-AB. LDs for the mixture containing 3-AB and 4-AB were obtained in the concentration order of
10–6 mol.l–1 for 3-AB and 10–7 mol.l–1 for 4 AB. Upon the determination using HPLC-ED with BDDFE in „wall-jet“ configuration and using HPLC-UVD, the column LiChroCART ChiraDex® (250 4 mm, 5 m, Merck, Germany) with covalently bonded cyclodextrin has been used. Mobile phase prepared by mixing 0.01 mol.l-1 acetate buffer pH 5.0, methanol and acetonitrile in the ratio 40:30:30 (v/v/v), mobile phase flow rate 1.0 ml.min–1, sampled volume 20 µl, wavelength 290 nm, detection potential +1,0 V, and the distance 1.5 mm of electrode surface to the orifice of capillary with mobile phase were used. Upon the determination using HPLC-UVD, the LDs were obtained in concentration range of 10–7 mol.l–1 for 2-AB and 3 AB, and of 10–8 mol.l–1 for 4-AB. Limits of determination in the concentration range of 10–8 mol.l–1 have been reached for all three analytes using HPLC-ED.