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VOLTAMMETRIC BEHAVIOR OF ATENOLOL OF DIFFERENT SHELF LIFE

A new approach was to apply a multisensory voltammetric system based on glassy carbon electrodes modified by "smart" polymers to solving the problems of comparative evaluation and identification of drugs based on atenolol (ATN) in terms of shelf life. Poly(phtalidilidenfluorene) (PPF) and poly(phtalidilidenbiphenyl) (PPB) were used to identify atenolol, which contain various functional groups and substituents in the phenylene rings of the main chain and phthalide cycles. Such sensors in different ways depend on the nature and content of electroactive and non-electroactive compounds and exhibit cross sensitivity to the analyzed preparations.

The resulting differential pulse voltammograms of the ATN with various shelf life on the modified PPF-Cl, PPB-Cl, PPB-Br glassy carbon electrodes differ slightly from each other. DPVs were processed using principal component analysis (PCA) to reliably recognise the ATN by shelf life. PCA was used to obtain score plots, where a single voltamogram including 300 instantaneous currents at different potentials was transformed into points on the principal components through mathematical processing. This method converts all voltammograms into a two-dimensional view, where their location relative to each other caused by insights between the voltamograms in the original data. The voltammograms of the current and past shelf life of atenolol formed clusters (“clouds”) of data on the score plots. However, on single sensors the clusters were close to each other and in some cases intersected. It gave errors in identification of atenolol by shelf life. It was possible to improve the PCA model using multisensory system. In this case the total explained dispersion was equal to 72%.

Thus, it is possible to solve problems of identifying drugs containing atenolol by shelf life using proposed approach.

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