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Modeling the electrophoretic mobility of basic drugs in aqueous-Methanolic buffers in capillary electrophoresis

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Abstract:

The electrophoretic mobility of three beta-blocker drugs, i.e. nadolol, oxprenolol and pindolol, in sodium acetate buffer containing different concentrations of methanol varying from 0 to 100 percent have been determined by a capillary electrophoresis instrument. The generated experimental data have been employed to evaluate the accuracy of a mathematical model to calculate the electrophoretic mobility at different concentrations of methanol. The proposed model is: In µm=¦c In µc+¦w In µw+K1 ¦c ¦w+K2 ¦²c ¦w. Where µ is the electrophoretic mobility, ¦ is the volume fraction, subscripts m, c and w are the mixed water-methanol, pure methanol and pure water, respectively, K1 and K2 are the model constants. The proposed model produced accurate results and the average percentage deviation between experimental and calculated mobilities was 1.21% for the data sets studied. This percentage error could be considered as an acceptable error where the relative standard deviation for the repeated experiments is around 2%.

Keywords:

Beta-blockers ، Water-methanol mixture

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