Optimization of Promethazine and Demethylpromethazine Separation Conditions in Capillary Electrophoresis by Response Surface Methodology

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Demethylpromethazine (DMPMZ) is one of the main metabolites of promethazine (PMZ). DMPMZ has only one methyl less than PMZ. In the past, in order to separate them by capillary electrophoresis (CE), it is often necessary to add additives to separation buffer solution. Under the optimized experimental conditions by response surface methodology, however, PMZ and DMPMZ can be separated well without using additives. The optimum CE conditions were 21.846 mmol/L phosphate buffer solution (pH 5.653) and separation voltage of 14.408 kV. The resolution of PMZ and DMPMZ is more than 1.5 without any additives under the optimized experimental conditions. The optimization method is universal for many multiparameter processes.

Keywords: Capillary electrophoresis; Promethazine; Demethylpromethazine; Optimization; Response surface methodology

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