Analysis of the pharmaceutical significant substances with the method of liquid chromatogramy

Marie Švástová

Abstract

The aim of the work: The aim of the work was a comparison of chromatographic sorbents, which are different in their synthesis and basis (silica and ZrO_2) in analysis of the tricyclic antidepressants (amitriptyline, nortriptyline, desipramine, imipramine) by high performance liquid chromatography (HPLC). The chromatographic behavior of the tricyclic antidepressant in wide range of pH wickedly capability of columns in appropriate chromatographic conditions (constitution mobile phase, temperature, flow mobile phase) is compared.

Used method: mobile phase: acetonitrile: water or 0.085% H_3PO_4 or buffer at various pH, flow rate 1.0 ml/min, temperature 40°C, injection volume 10 µl, detection UV 254nm, isocratic elution. Analytical columns: Synergi fusion-RP, Zorbax Eclipse XDB, XTerra RP18, Zorbax Extend, Discovery ZR-PBP

Results and conclusions: Tricyclic antidepressants were analyzed at stationary phases at silica basis at three values pH (2, 7, 9). During the separation at theses sorbents express tailing and fronting, with subsequent reduction of separation couple standards. As an alternative column – stationary phase on a basis of ZrO_2 modified by polybutadien was chosen. The analysis on the zirconium based column was carried out in wide pH range (2-12), mobile phase using acetonitrile and buffer (70/30, v/v). To decrease the retention at high pH (11,2 and 12,0) acetonitrile was substituted by a weaker eluent - methanol (methanol/buffer, 60/40, v/v). The sorbent on the basis ZrO_2 is the appropriate alternative to the silica columns at the analysis of the tricyclic antidepressants in wide pH and temperature range.