

Isocratic and gradient elution: A comparison in terms of method robustness of supercritical fluid chromatography and method transfer

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Abstract

Parameters such as accuracy, precision range, robustness, and system suitability were examined and found to be acceptable for the intended analyses in robustness of SFC method. During robustness evaluation, a range of parameters including flow rate, column temperature, optimum injection volume, mobile phase pH, buffer concentration, retention factor, tailing factor, UV wavelength and resolution were shown to be satisfactory. This paper also describes some simple rules for transferring successfully a conventional gradient SFC chromatographic separation to an isocratic one with limited influence on resolution and sometimes with better resolution. The approach was evaluated with three different stationary phases and found to be successful. From the studied columns high efficiencies were observed for bare silica column as compared to triazole and 3-Hydroxyphenyl column.

Keywords: Method transfer, Isocratic mode, Supercritical fluid chromatography, 3-Hydroxyphenyl column