

# ADVANTAGES OF SUPERFICIALLY POROUS SILICA FOR PHARMACEUTICAL ANALYSIS WITH IN HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY

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The purpose of our study was to compare chromatographic performance of fully porous and superficially porous silica for official pharmaceutical analysis methods.

We analyzed Licorice roots and Valeriana roots with the European Pharmacopoeia method.

In the European Pharmacopoeia method, it is recommended to use fully porous silica in the standard 250 x 4.5 mm dimension HPLC column packed with 5 micrometer size fully porous C18s Silica particles [1]. Our goal was to develop a short method which involves the use of superficially porous silica as an adsorbent. In particular, 50 x 3.0 mm Poroshell 120 EC-C18 column packed with 2.7 micrometer superficially porous silica particles was used.

The replacement of the aforementioned HPLC column recommended by the European Pharmacopoeia with novel highly efficient column packed with superficially porous silica allowed us to significantly reduce both, the analysis time (from 27.8 minutes down to 8.1 minutes for licorice root sample, and from 21.1 minutes to 5.07 minutes for Valeriana root sample) as well as the volume of the harmful and at the same time expensive mobile phase (from 41.7 ml to 8.1 ml in the case of Licorice roots, and from 31.7 ml to 7.6 ml in the case of Valeriana roots), without losing the separation efficiency.

The experiment clearly shows the advantages of the superficially porous silica compared to the traditional fully porous silica, which was expressed both in the separation efficiency short analyses time and reduction of the usage of mobile phases.

Reference:

[1] Ph.Eur. 10.0, 01/2012:0277 Licorice root; Ph.Eur. 10.0, 04/2017:2526 Valeriana root