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Jong Sup Jeon, J Chromatogr Sep Tech 2016, 7:6(Suppl)
http://dx.doi.org/10.4172/2157-7064.C1.019

Robustness test of the chromatographic method for the quantification of chlorogenic acid in coffee brew

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Coffee has been for decades the most commercialized and widely consumed beverage in the world. Coffee beans contain a large variety of substances, which in many cases are biologically active such as caffeine and chlorogenic acids. Chlorogenic acids are water-soluble phenolic components of coffee and other plants formed by the esterification of certain trans-cinnamic acids, such as caffeic, ferulic and p-coumaric acids with quinic acid. The main subgroups of chlorogenic acid isomers in coffee are the caffeoylquinic acids, feruloylquinic acids, dicaffeoylquinic acids and in smaller amounts p-coumaroylquinic acids. In this study, we carried out robustness evaluation for method validation of quantification of chlorogenic acid in coffee brew using Youden's test. It was possible to determine the effect of each analytical parameter in the final analysis results. Seven analytical factors were selected and small variations were induced in the nominal values of the method. Then, 8 runs were performed aiming to determine the influence of each parameter in the final result. The 7 factors are: Concentration of KH_2PO_4 in mobile phase, column temperarture, flow rate, wavelength of detector, column supplier and initial mobile phase composition. Standard deviation of the differences Di (SDi) was calculated and that value was not larger than the standard deviation of the method carried out under within-laboratory reproducibility conditions. The experimental *t* values resulted below the 2-tailed t-critical value for all 7 factors. The tested procedure proved to be fairly robust since minor fluctuations in the operative parameter that can occur during the routine application of the method do not significantly affect its performance characteristics.

Biography

Jong Sup Jeon has completed his PhD from College of Veterinary Medicine, Konkuk University, Republic of Korea. He is a DVM and Research Scientist for the Public Health in Gyeonggi Province, Institute of Health and Environment, Republic of Korea. He has published variable domestic and international papers (subjects: Antibiotics, hazardous materials in food and functional ingredients in cosmetics) in reputed journals and served as a co-worker in various field.

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