Abstract

Phenolic acids have many biological pro-health properties and are also pharmacologically active compounds. An important member of this family is chlorogenic acid (CGA) or 5-Caffeoylquinic acid (5-CQA, IUPAC) which is the most abundant among other CQAs isomers. Chemically, it is an ester of caffeic acid and Quinic acid. It is biologically important poly-phenolic acid and is mostly a part of our routine diet. Chlorogenic acid is regarded as a high class antioxidant which helps cells against reactive oxygen species (ROS) and prevents aging. Many analytical methods have been developed for the determination of Chlorogenic acid but they are neither reliable nor validated according to the ICH guidelines. This study aims to develop, optimize, and validate an analytical method to determine chlorogenic acid in various kinds of plant extracts using High Performance Liquid Chromatography (HPLC). For HPLC analysis, C-18 column (250 × 4.6 mm, 5 µm) was used as stationary phase. The mobile phase was consisted of methanol: 0.1% Formic Acid in water (80:20, pH 3.0) with the flow rate of 1.0 ml/min. The PDA detector was set at 328 nm. Standard solutions of different concentration ranging from 1-500 µg/ml were prepared and injected for the linearity curve and $R^2 = 0.997$ was obtained. The method's LOD and LOQ were 0.0281 mg/ml and 0.0853 mg/ml respectively. Highest concentration of chlorogenic acid was found in Tea with 178 µg/ml and the least concentration was found in Peach with 0.45 µg/ml. The Developed method was optimized and validated according to the ICH guidelines. The newly developed method verifiably found to be a rapid, accurate and sensitive method for the routine analysis of Chlorogenic acid.