Abstract

The theoretical part describes the HPLC method and its components. The following are basic information about the analyte, specifically about the behavior of gold and its reactivity.

The experimental part describes the procedure of optimizing the composition of the mobile phase in the HILIC system on two stationary phases, namely on Luna NH_2 columns (5 µm, 100 Å, 2 x 250 mm) and XBridge Amide (3.5 µm, 2.1 x 150 mm).

The best chromatograms were recorded on a Luna NH_2 column in a mobile phase composed of 94% ACN and 6% 5.0 mmol·dm^{-3} HCl and its flow rate 0.4 ml·min^{-1}. For the XBridge Amide column, the most suitable measurement conditions were a mobile phase composition of 94% ACN and 6% 10.0 mmol·dm^{-3} HCl and a flow rate of 0.7 ml·min^{-1}. Subsequently, the repeatability of the measurements was verified under these conditions, which was evaluated from 10 repeated injections of a tetrachloroaurate solution of a concentration of 1.0 mmol·dm^{-3} in 100% ACN. Repeatability did not give satisfactory results, so the reason was looked for. Verification of the functionality of the injector and detector with the column disconnected was successful. After reconnecting the column, it was found that the cause was right here, due to the use of a mobile phase containing HCl and it was no longer possible to work with the column. Therefore, it was not possible to measure the calibration solutions and determine the limit of detection and the limit of determination for the selected experimental conditions.

Keywords

Potassium tetrachloroaurate, high performance liquid chromatography, HILIC