Abstract

The content of this thesis was to analyse fruit and vegetable extracts. In the samples, the concentration of lead and cadmium was determine by atomic absorption spectrometry. First, it was necessary to conduct an optimalization study to find the optimal conditions of the method and select the appropriate method of atomization of the sample. It was chosen between flame and electrothermal atomization. For optimization, the following parameters were studied for atomization in flame: beam height above the burner, fuel flow rate, horizontal burner position, spectral interval width and lamp supply current. An optimization study for electrothermal atomization included the effect of atomization a pyrolysis temperature on signal size. Standard lead and cadmium solutions were used to determine the detection limits of the instruments used. The limit of detection in flame atomization was for lead respectively cadmium 0,002 mg/l, resp. 0,003 mg/l. In electrothermal atomization the detection limit was for lead, resp. cadmium 0,026 μg/l, resp. 0,029 μg/l.

The experimentally determined values were statistically processed and the lead and cadmium contents were compared with the lead and cadmium limit values that may be contained in a sample of fruit and vegetables according to Commission Regulation (EC) No 1881/2006 of 19th December 2006. Experumentally determined lead and cadmium levels in all fruit and vegetable samples comply with the maximum permitted level.

Key words

Atomic absorption spectrometry, lead, cadmium, flame atomization, electrothermal atomization, extracts, fruit, vegetable.