

## Abstract

The levels of beryllium ( Be ) in olive leaves maybe very low and have not been reported neither in olive leaves certified reference materials ( e.g. BCR CRM No. 62 ) nor in the literature until present. The purpose of this study is trying to develop a method for the determination of Be in olive leaves using microwave digestion, chelating with acetylacetonate(acac), pre-concentrating by solid-phase extraction, eluting with methanol and then measured by GFAAS.

An amount (20 mg) of dried olive leaves (BCR No.62 and four real samples collected from Tunghai, Paoshan, Teinwei, and Dasi) was placed in a 7-mL Teflon vessel. Appropriate amounts of concentrated  $\text{HNO}_3$  and  $\text{H}_2\text{O}_2$  were added to the Teflon vessel. The mixture was microwave digested at 85 °C for 10 min and the sample matrix was decomposed. After digestion, the pH was adjusted to 5 – 6 by using an ammonia solution (1 M). Suitable amounts of  $\text{NH}_4\text{OAc}$  buffer and acac were added to the solution in order to form a chelate of  $\text{Be}(\text{acac})_2$ . The chelate was pre-concentrated on two home-made oasis cartridges in series and each cartridge was eluted with methanol, and adjusted to 1.00 mL. A portion (20  $\mu\text{L}$ ) was introduced into a graphite tube and the amount of Be was measured by GFAAS.

The contents of beryllium in five olive leave samples ( BCR No. 62, Tunghai, Paoshan, Tianwei, and Dasi ) were found to be 10.2 ng/g, 5.9 ng/g, 28.0 ng/g, 3.6 ng/g, and 4.5 ng/g, respectively, by using the standard addition method. Good spiked recoveries ( 97.2 – 101 % ) were observed. The MDL value for Be was found to be 0.3 ng/g; the calibration graph was linear up to 38.0 ng/g.