



## Evaluation of the ICP-AES Method For Element Determination in Samples of Rosa Dumalis Bechst.

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An inductively coupled plasma - atomic emission spectrometry (ICP-AES) method for the determination of 21 elements (Al, As, B, Ba, Ca, Cd, Cr, Co, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Se, V and Zn) in samples of Rosa dumalis Bechst was optimized and validated. Robust plasma conditions were achieved at a radiofrequency power of 1150 W and an argon nebulizer flow of 0.5 L min<sup>-1</sup>. All experiments in axial and radial view modes were performed under these analytical conditions. Standard addition curves obtained from Rosa dumalis Bechst samples spiked with different concentrations were then compared with external calibration lines established from multi-element standards to select analytical lines free from spectral interferences. The validation process included accuracy, precision, and linearity. The standard addition method was used to assess the accuracy and precision of the method. The recoveries obtained ranged from 89% to 107%. The correlation coefficient for the calibration curves was higher than 0.999. Among the macroelements, K is the most abundant element, followed by Ca, P, Mg and Na. Among microelements, Mn is the most abundant element, followed by Si, Fe, Ba, Zn and Al. The maximum allowed limits recommended by the World Health Organization (WHO) for Pb and Cd are 10 mg kg<sup>-1</sup> and 0.3 mg kg<sup>-1</sup>, respectively. The concentrations of Pb and Cd in all samples studied were lower than the maximum levels allowed by WHO.

**Keywords:** elements, Rosa dumalis Bechst., ICP AES, optimization, validation

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