

**MULTIELEMENTAR DETERMINATION OF TRACE METALS IN RADIO-  
IODINE COMPOUNDS BY INDUCTIVELY COUPLED PLASMA OPTI-  
CAL EMISSION SPECTROMETRY.**

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**Aim:** The major use of radioiodinated compound is in nuclear medical imaging. The two most important isotopes of iodine radiopharmaceuticals are iodine-123 ( $^{123}\text{I}$ ) and iodine-131 ( $^{131}\text{I}$ ). The quality control specifications for labeling molecules with  $^{131}\text{I}/^{123}\text{I}$  injection involve sterility, bacterial endotoxins, pH and radiochemical purity tests. However, little attention has been given to the analysis of chemical impurities. The presence of impurities before radiolabeling can result in undesirable labeled molecules that may affect the diagnostic. Chemical impurities with potential toxic, physiologic or pharmacological effects must be evaluated and quantified. The aim of this work was to perform multielementar determination of 24 trace metals in  $^{131}\text{I}/^{123}\text{I}$  labeling molecules used in nuclear medicine by inductively coupled plasma optical emission spectrometry (ICP-OES). **Materials and methods:** The measurements were carried out in a Vista MPX simultaneous ICP-OES (Varian Inc., Australia) equipped with axially viewed plasma and concentric glass nebulizer. Argon was used as plasma and auxiliary gas. The sample was introduced directly into the hot  $\text{g mL}^{-1}$   $\mu$ plasma where metals were atomized and determined. The 100 multielementar standard (Merck) contained aluminum, boron, barium, beryllium, bismuth, cadmium, calcium, chromium, cobalt, copper, iron, gallium, lithium, magnesium, manganese, nickel, lead, potassium, selenium, sodium, strontium, tellurium, thallium and zinc was used for  $\text{g mL}^{-1}$  range. The  $\mu$ obtaining calibration curves in the 0.0-1.0 calibration and blank solutions were prepared with purified water and stabilized in 3% v/v concentrated  $\text{HNO}_3$ . Some batches of MIBG- $^{131}\text{I}/^{123}\text{I}$ , Hippuran- $^{131}\text{I}$  and HSA- $^{131}\text{I}$  samples were diluted to 1:25 with purified water and analyzed. Three injections of each standard and samples were made to obtain the results. The correlation coefficients of the calibration curves were higher than 0.995. **Results and discussion:** It was observed that 5 ppm standard in the analytical curve decreases correlation coefficient increasing standard deviation mainly for Ca, Ba, Mg, K and Na, which had emission lines of lower sensitivity established. Al, Cu, Mg and Pb were the impurities observed in the samples and the concentration was lower than 2 ppm. **Conclusion:** ICP is an important tool for simultaneous metal analysis using minimum volume sample of radiopharmaceuticals and being a fast and accurate method for determination of impurities.