ABSTRACT

Atomic Absorption Spectrometer (AAS) and Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES) are methods used for analysis of heavy metal elements. This study aims to compare the AAS and ICP-OES methods on the hair of breast cancer patients. Hair represents body content during the last two months, so the influence of breast cancer on heavy metal toxicity can be analyzed using hair. The heavy metals analyzed in the hair of breast cancer patients were copper (Cu), ferrum (Fe), and zinc (Zn). The results of heavy metal analysis using the AAS method on hair samples from breast cancer patients showed that the highest level of Cu was 44.08 ppm and the lowest was 14.87 ppm. The highest Fe element level was 65.02 ppm and the lowest was 5.98 ppm. The highest Zn element level was 499.89 ppm and the lowest was 135.09 ppm. The results of heavy metal analysis using the ICP-OES method on hair samples from breast cancer patients showed that the highest level of Cu was 8.50 ppm and the lowest was 4.68 ppm. The highest Fe element content was 99.98 ppm and the lowest was 10.00 ppm. The highest Zn element level was 678.58 and the lowest was 110.11 ppm. The linearity of the AAS method for measuring the Cu element was obtained R2 = 0.9989 and the linearity of the ICP-OES method for the Cu element was obtained R2 = 1. The linearity of the AAS method for measuring the Fe element was obtained R2 = 0.9989 and the linearity of the ICP-OES method for the Fe element was obtained R2 = 0.9999. The linearity of the AAS method for measuring the Zn element was obtained R2 = 0.9958 and the linearity of the ICP-OES method for the Zn element was obtained R2 = 0.9999.

Keywords: *AAS, ICP-OES, heavy metals, hair, breast cancer.*