DETERMINATION OF HAIR SELENIUM LEVEL IN NON-CANCER AND CANCER PATIENTS WITH ICP-MS

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Cancer is an uncontrolled growth and spread of cells may affect almost any tissue of the body and is becoming an increasingly significant disease worldwide [1]. Although they are minor building components in tissues, trace elements directly or indirectly play an important role in various human physiological and metabolic processes [2]. It is well known that many trace elements play an essential role in a number of biological processes and consequently trace elements exert action, directly or indirectly, on the carcinogenic process [3]. Among trace elements, selenium (Se) is an universal essential trace element in the human body, an important part of the antioxidant enzymes that protect cells against the effects of free radicals that are produced during the normal oxygen metabolism [1]. Recent advances have led to several mechanisms being proposed for the anticancer activity of Se. The analysis of human hair is useful in monitoring the levels of certain trace elements in the body. Hair samples can be stored at room temperature for a long time, and their composition does not change measurably [4].

In this study; hair Se levels of non cancer and patient with three different carcinoma (gastrointestinal system, head and neck, and lung) were determined with ICP-MS. Hair samples of cancer patients were collected from Division of Radiation Oncology of the Erciyes University Hospital. The samples were taken from the occipital area of the head, close to the scalp with stainless-steel scissors and washed (with acetone, water and acetone) and then samples were dried in a drying oven at 100 °C before analysis. Hair samples of about 50 mg were weighed and they were digested with 9 mL of 68% ultra pure nitric acid and 1 mL of 35% hydrogen peroxide using a micro-wave digester. Completely clear, colorless, homogenous digests were obtained, and subsequently diluted with high-purity water to 25 mL. The diluted solutions were supplied to the determination of Se level by ICP-MS. According to the obtained results; the range of Se concentration of cancer patients is wider than non cancer group.

References