DETERMINATION OF THE SODIUM, ALUMINIUM, POTASSIUM, MANGANESE, MAGNESIUM, BROMINE, CADMIUM AND CHLORINE CONCENTRATION VALUES IN THE WHOLE BLOOD SAMPLES OF HUMAN CANCER USING NEUTRON ACTIVATION ANALYSIS FACILITY OF THE SECOND EGYPTIAN RESEARCH REACTOR

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Neutron activation analysis (NAA) using the Second Egyptian Research Reactor (ETRR-2) has been utilized to analyze whole blood samples. The National Cancer Institute of Egypt provided us with 18 blood samples (11 breast, 2 prostate, 2 colon, 1 pancreatic, 1 ovarian) and a random sample of normal person to estimate the concentration values of Sodium, Aluminium, Potassium, Manganese, Magnesium, Bromine, Chlorine. The pneumatic irradiation rabbit system (PIRS) built in the vertical thermal column of the ETRR-2 reactor is used for short time irradiation at constant power. Elemental concentrations were estimated from measurements of the gamma-ray spectra of the product short lived isotopes in the samples. The calculated thermal to epithermal neutron flux ratio was found to be 196 at irradiation position. The tabulated concentrations were calculated by using k_0-neutron activation analysis (k_0NAA) standardization method.

Keywords: whole blood, k_0-standardization, neutron activation analysis, cancer.