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The Concentrations of Major and Trace Elements in Powdered Milk using XRF and NAA, and Comparison to Other Techniques

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Milk and dairy products are considering one of the unique sources for children and even adult's nutrition. They are also the source of some vitamins and many minerals. Furthermore, they are most versatile for natural food in terms of configuration and determine the necessary components for a healthy life. Milk contains more than twenty elements of different trace, most of them are necessary and very important, such as copper, zinc, manganese and iron. These elements are the factors involved in many enzymes and play an important role in many physiological functions. The lack of these elements cause disturbances and pathological conditions. In addition, it was noted that the increase in the concentrations of heavy elements such as chromium, cadmium, lead and mercurywill cause damage to the human origins such as kidney's disorder, liver and anemia. Furthermore, these inspections on the heavy elements are of particular concern as milk is largely consumed by infants and children .

In this study eight different milk samples were selected from the Iraqi markets to measure the concentrations of major and trace elements. The samples that were selected are most widely usedby the Iraqi consumers. These brands are Ankor, Nan, Similac, Nedo, Gold, Novalac, Kikoz/1 and Kikoz/2.

Different analyzing techniques were used to cover most of the elements that exist in the samples. Techniques such as X-Ray fluorescence (XRF), Neutron activation analysis (NAA) technique, chemical analyses Kjeldahl technique and atomic absorption spectroscopy (AAS) technique were employed to determine these elements and their concentrations. The obtained results were compared with authorized limit by FAO/WHO standards. Necessary to evaluate the contents of "essential"and "toxic"heavy metals on a greater number of milk samples from various supplies and confirm the absence of possible toxicological risks.

Country/Organization invited to participate

Iraq

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