

## **The influence of thermal treatment on the chickpeas and lentils minerals content**

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### **Abstract**

Chickpeas and lentils have an important role in the traditional diet, as they fulfill the dietary guidelines recommended for a healthy diet. Legumes are the second most important group of plant crops after cereals in human nutrition. This fact is due to the low cost of cultivation, nutritional properties and beneficial physiological effects. Chickpeas and lentils constitute 13% and 5%, respectively, of the most widespread legume crops in the Republic of Moldova. Regular consumption of legumes has been reported to reduce people's susceptibility to chronic diseases such as cardiovascular disease, diabetes, cancer and excess body mass. This may be due to the high content of protein, dietary fiber, essential fatty acids, minerals and isoflavones. The aim of this study was to investigate the influence of heat treatment (boiling) on the content of minerals in chickpeas and lentils.

Two varieties of legumes - chickpea and lentil - were used for the research. The content of minerals in the dried legumes and in their boiling water was determined. Flame photometry (propane-butane-air) was applied to determine the sodium and potassium content. To determine the magnesium, calcium, manganese and iron content, atomic absorption spectrophotometry in flame (acetylene-air) was used.

The obtained results demonstrated that dry chickpea and lentil grains are important foods for the essential minerals ingestion necessary for human health. In general, among the minerals determined in the dry samples, potassium content was the highest, followed by magnesium and calcium content. The lowest content refers to manganese. The content of sodium, magnesium and calcium in the lentil samples was higher than in the chickpea samples. And in the case of the potassium, manganese and iron content, the chickpea samples had the highest values. Chickpeas and lentils have also been found to be excellent sources of iron.

The legumes boiling (heat treatment) process had a significant effect on the minerals transfer from the grains to the boiling water. It was found that in the lentils boiling water potassium has the highest content of minerals, followed by magnesium, calcium and manganese had the lowest content. In chickpea boiling water, the order of minerals is preserved as in the case of lentil boiling water, but their content is lower.

Analyzing the obtained results, it was found that in the elaborated process of obtaining the legumes boiling water, not only protein substances but also an essential amount of minerals pass from the boiled grains. This allow to fortify fasting food products with minerals when boiling water is used as a foaming agent.

**Keywords:** Chickpeas, Lentils, Boiling water, Mineral content, Food fortification.

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