

DRIED FIGS AS SOURCES OF ESSENTIAL MICROELEMENTS

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Abstract

The paper aims to determine the concentration of some microelements essential in cardiovascular system health from dried figs and evaluate their mineral intake. The concentrations of Fe, Mn, Zn and Cu were determined from samples of dried figs from the local trade, imported from different countries in the Mediterranean areas.

The results obtained, by flame atomic absorption spectrometry (FAAS) method, show that these fruits contain important quantities of essential microelements, depending on fig providers: 22.1 - 32.5 mg/kg Fe, 4.14 - 12.73 mg/kg Mn, 4.53 - 10.20 mg/kg Zn and 3.95 - 9.16 mg/kg Cu.

The analytical results obtained allowed the evaluation of the mineral intake of these fruits for men and women aged between 19 - 50 years. Thus, a consumption of 40 g of dried figs covers a large part of the need for microelements, as follows: 13.99% Fe, 13.39% Mn, 2.83% Zn and 28.07% Cu - for men and 6.22% Fe, 17.11% Mn, 3.89% Zn and 28.07% Cu - for women.

These results show that the dried figs analyzed could be considered as sources with some essential microelements, especially in terms of Cu, Mn and Fe.

Introduction

Dried figs are a good source of carbohydrates, including fiber, sugars (mainly fructose and glucose), proteins, organic acids, phenolic compounds and phytochemicals, essential minerals, vitamins and enzymes.[1,2,4,6,8,10]. Previous studies indicate that dried figs are a good source of essential microelements: Zn, Fe, Mn, Cu, Se etc who play significant cardioprotective roles when they are present in adequate pharmacologic concentrations due to their antioxidant, antiinflammatory and immune function modulatory [3,5].

Experimental

In this study we aimed to determine the concentration of Fe, Mn, Zn and Cu, microelements essential for the proper functioning of the cardiovascular system, from samples of dried figs sold in the local markets and evaluation of the mineral intake corresponding to a consumption of 40 g of figs. In order to determine the microelements, samples of dried figs (imported from countries in the Mediterranean area) were taken from five markets in Timisoara (Provider 1-5), from which the samples were made for the proper analysis. The Fe, Mn, Zn and Cu concentrations in the dried figs were determined by the Flame atomic absorption spectrometry method - the dried calcination variant and the solubilization of the inorganic residue in 0.5 M HNO₃ [11].

To determine the mineral intake, respectively the degree of coverage of the daily requirement with micronutrients, the daily requirement recommended by Fe, Mn, Zn and Cu, for people

aged 19 - 50 years (table1) [3] and their concentrations (mean values) in 40 g were taken into account. uacate figs analyzed. Usually, 40 g (on a per serving basis) is a correct amount that can be considered as the average dried figs quantity consumed by an ordinary person [12].

Table 1 The concentration of Fe, Mn, Zn and Cu in dried figs from Mediterranean countries

Specification	Elements (mg/kg)			
	Fe	Mn	Zn	Cu
Provider 1	32.5±1.99	12.73±0.81	4.53±0.39	7.78±0.53
Provider 2	29.2±1.87	4.14±0.49	9.75±0.56	3.95±0.37
Provider 3	31.8±1.70	10.72±0.73	7.62±0.50	9.16±0.61
Provider 4	24.3±0.98	5.24±0.48	6.81±0.47	5.47±0.40
Provider 5	22.1±0.75	5.66±0.42	10.2±0.59	5.22±0.46
<i>Mean values</i>	27.98	7.70	7.72	6.32

As shown in Table 1, microelement concentrations varies depending on fig providers. Fe is the best represented among the microelements, the average concentration having the value of 27.98 mg/kg. Lower but very close average concentrations were determined for Zn and Mn (7.2 and 7.70 mg/kg, respectively). Cu was identified in smaller amounts (6.32 mg/kg average value) than Fe, but close to Zn and Mn concentration.

Table 2. Mean mineral intake for men and women corresponding to a consumption of 40 g of dried figs

Specification	Mineral intake [%]							
	Men				Women			
	Fe	Mn	Zn	Cu	Fe	Mn	Zn	Cu
Mean value	13.99	13.39	2.83	28.07	6.22	17.11	3.89	28.07

According to Table 2, it can be stated that, from the point of view of insurance with essential microelements, the highest values were registered in the case of Cu (women and men), Mn (women and men) and Fe (women). Lower values were determined for Fe (women) and Zn (men and women).

Conclusion

The results of this research confirm that dried figs contain significant amounts of essential microelements that play significant cardio-protective roles.

The concentrations of the microelements in the analyzed figs show non-uniformity, depending on the origin and nature of the microelement.

The average concentrations of microelements in the analyzed dried figs show the following decreasing trend: Fe > Zn ≅ Mn > Cu.

The results obtained when evaluating the mineral intake show that dried figs can be considered as sources of essential microelements, especially in terms of Cu, Mn and Fe.

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