

properties of extracts of the different forms of presentation/parts of the garlic existing in the market (bulb, in powder and in tablets/capsules), by the radical 2,2-diphenyl-1-picrylhydrazyl (DPPH•) method and by evaluation of the ferric reducing antioxidant power (FRAP). The scavenging capacity of the same extracts against reactive species ($O_2^{\cdot-}$, H_2O_2 , NO^{\cdot}) was also evaluated. Finally, the biological activity of the presentation forms of garlic existing in the market was compared with the one of the garlic peel, considered food waste, taking also into account some variables that can influence the properties of the bulb, that is, boiling and freezing.

Results

TPC was superior in the frozen chopped garlic sample, having the garlic tablets the lowest content. The cooked garlic presented an inferior value of TPC when comparing with the raw chopped bulb. These results indicate that cooking and freezing methods intervene directly with the total phenolic content, but in an opposite way. The extract of cooked garlic had the higher value of TFC, belonging the lowest tenor to garlic tablets. Radical DPPH• and FRAP methods allowed to verify that the cooked garlic extract evidenced a superior antioxidant activity. This result can be explained by cell wall rupture derived from heating, provoking antioxidant substance release, new and/or stronger antioxidant substance formation or oxidant enzymes inhibition [4]. The frozen chopped garlic extract presented the highest scavenging capacity of the three studied reactive species. In general, the higher the total phenolic content, the greater the capacity of inhibition of reactive species NO^{\cdot} , $O_2^{\cdot-}$ and H_2O_2 .

Conclusions

This study has showed that the diverse forms of presentation/parts of the garlic possess high bioactive compounds content, and consequently antioxidant activity, presenting health benefits.

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Keywords

Allium sativum L., Bioactive compounds, Antioxidant activity, Reactive species.

P72

Influence of gamma irradiation in the antioxidant potential of pumpkin seeds and mung beans

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BMC Health Services Research 2018, **18**(Suppl 2):P72

Food conservation is a challenge for the food industry. The high respiration rate, the lack of physical protection to avoid water loss and the changes due to microbial attack are often associated with loss of food quality, contributing to deterioration through browning, weight loss and texture changes [1]. Furthermore, bacteria, moulds, enzymatic activity (mainly polyphenol oxidase) and biochemical changes can cause spoilage during storage [2]. The use of ionizing energy for preservation has been widely studied by the food industry. However, studies evaluating the effects of ionizing radiation are mostly available in cultivated species, being scarce the reports on wild species

and food waste, considered add-value foods. In this regard, food technology is making progress towards increasing food preservation and contributing to a reduction of the incidence of food-related diseases. Previous studies assessing the potential of gamma irradiation as a suitable technique to increase natural products shelf-life were focused in nutritional and chemical parameters, including bioactive compounds and their antioxidant activity [3]. Many natural compounds found in edible food wastes (seeds) or grains (beans) present antioxidant activity. Among the most important natural antioxidants are phenolic compounds (flavonoids, phenolic acids and tannins), nitrogenous compounds (alkaloids, amino acids, peptides, amines and chlorophyll byproducts), carotenoids, tocopherols and ascorbic acid. In the present work, the effects of gamma radiation dose (0, 0.5, 1.0, 1.5 and 5.0 kGy) on the chemical composition (total phenolics and total flavonoids) of pumpkin seeds and mung beans were evaluated. The antioxidant activity was studied using DPPH• and FRAP assays. It was observed a slight increase in the content of bioactive compounds, as well as in antioxidant activity, with irradiation doses below 1.5 kGy. Final results showed that irradiation may be a viable technique to guarantee the content of bioactive compounds, as well as their biological properties, including antioxidant activity.

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Keywords

Food conservation, Gamma irradiation, Pumpkin seeds, Mung beans, Antioxidants.

P73

The effects of swimming and swimming complemented with water walking on spirometry values

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BMC Health Services Research 2018, **18**(Suppl 2):P73

Background

Spirometry is a standard pulmonary function test that measures how an individual inhales or exhales volumes of air as a function of time. It is the most important and most frequently performed pulmonary function testing procedure, having become indispensable for the prevention, diagnosis and evaluation of various respiratory impairments. However, there have been only a few studies addressing the effect of physical activity on pulmonary function test results and investigating the association between body composition and respiratory parameters in sports activities [1-3].

Objective

The objective of this study was to verify if there are differences in spirometry values in children aged between 6 and 12 years who practice swimming complemented with water walking at the end of each session and those who only practice swimming.

Methods

In this study 28 subjects (mean age, 7.68 ± 1.16 years) participated and were divided into two groups: swimming group (SG) (N=9) and