High total phenol content, antioxidant activity and mineral content in 'Sweetheart' cherry peel

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Abstract

Cherry is used for several processed products, resulting in a large volume of subproducts, mainly stones and peel. For evaluation of nutritional potential of some sub products, total phenol content (Folin-Ciocalteu reagent method), antioxidant activity (DPPH method), and calcium, magnesium, sodium, potassium and phosphorus content (ICP-AES) were determined in 'Sweetheart' cherry peel. Results were compared with those of 'Tulameen' raspberry fruit cultivated in the same region. Raspberry is recognised to having a high level of antioxidants, minerals and fibre. Average concentrations of 2793.8 mg gallic acid equivalent kg^{-1}, 3450.9 mg Trolox equivalent kg^{-1}, (Ca) 317.7, (Mg) 267.5, (Na) 9.8, (K) 2196.2, and (P) 407.5 mg kg^{-1} were found in 'Sweetheart' cherry peel. Regarding raspberries, concentrations of 1411.8 mg gallic acid equivalent kg^{-1}, 2709.5 mg Trolox equivalent kg^{-1}, (Ca) 281.9, (Mg) 227.2, (Na) 1.3, (K) 1646.7, and (P) 76.7 mg kg^{-1} were found. All nutritional concentrations in peel were significantly higher than in the remaining fruit, showing its potential for nutrition complement production.

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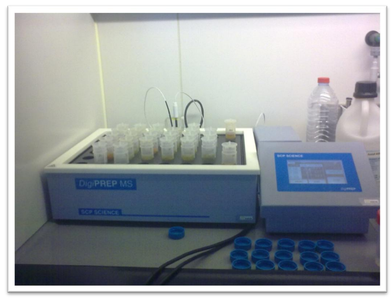
Introduction

The Cherry fruit is considered a nutrient dense food with a relatively low caloric content and a significant amount of important nutrients and bioactive food components. In Europe, about share of 15% of sweet cherry was sent to the processing industry in 2002-2004. In the United Sates, a more recent statistic indicates that in 2012 about 26% of sweet cherry production was used in processed products. Recently some cherry juice, and juice concentrate are present in the market. The production of the juices results in a sub product rich in cherry peel.

Raspberry is recognized as one of the richest fruits in antioxidants and fiber. Raspberry is used for multiple nutritional supplements and in pharmaceutical products due to its bioactive food components.

This study is included a preliminary fruit characterization of sweet cherry from Cova da Beira, in order to evaluate the potential for new products. We present nutritional characteristics that potentiate the use of cherry peel for nutritional complements production.

Methods



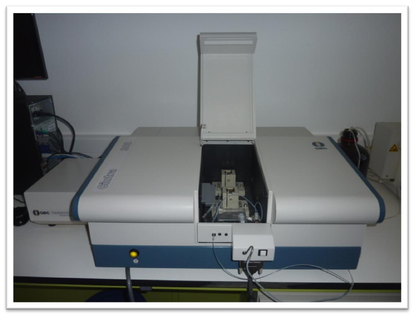
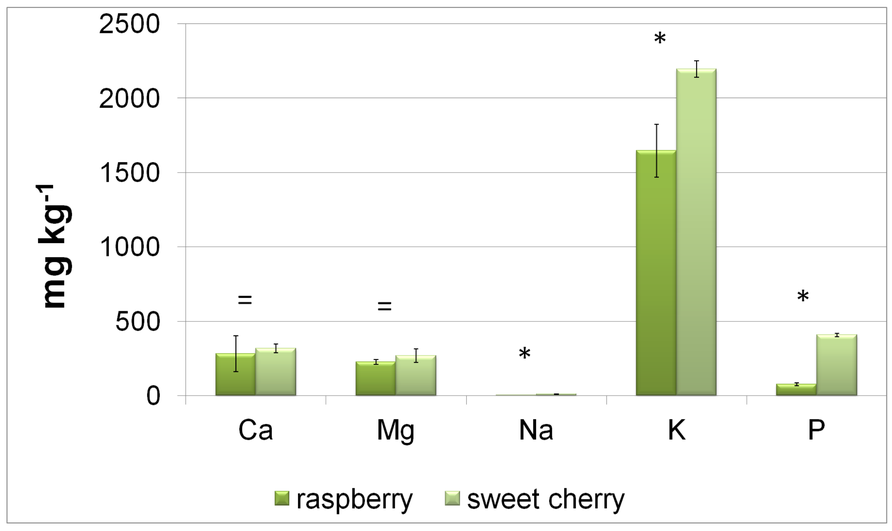
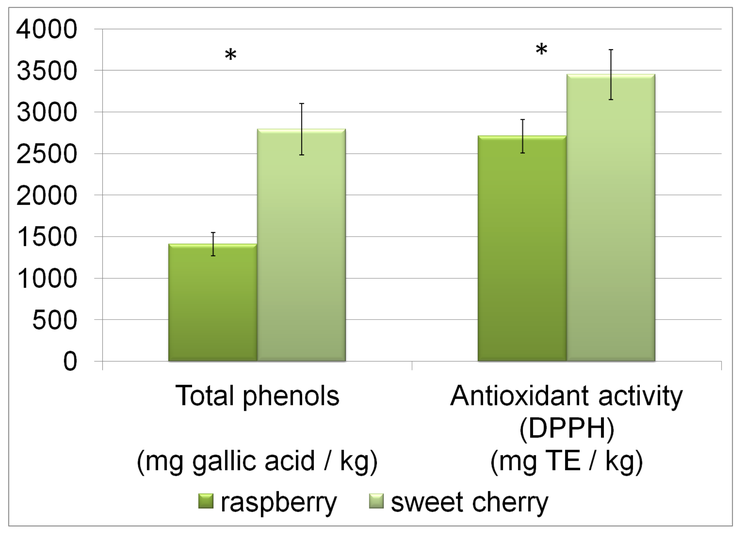


Table 1- Wavelength and limits of quantification for the analyzed minerals.

Element	Wavelength (nm)	Limit of quantification (mg kg^{-1} FW)
Ca	393.366	0.7
K	766.490	9.4
Mg	279.553	0.1
Na	588.995	0.2
P	214.915	0.05

Results





* significantly different (p=0.005)
= not significantly different (p=0.05)

- ‘Sweetheart’ cherry peel presented a total phenols content and antioxidant capacity higher than raspberry.
- ‘Sweetheart’ cherry peel exhibited a total phenols content and antioxidant capacity higher than the fruit (Miguel-Pintado et al., 2013).
- In both products the Sodium concentration is low
- Calcium and Magnesium showed similar concentrations in raspberry and cherry peel
- Potassium and Phosphorous had significantly higher concentrations in cherry peel.

Conclusions

Nutritional concentrations in cherry peel were significantly higher than in the remaining fruit, showing its potential for nutritional complements production associated to the production of cherry juices or juice concentrates.

This study showed the nutritional interest of raspberry and the potential of cheery peel as a subproduct with nutritional interest. The interest of this subproduct is reflected mainly by its bioactive food components. Therefore its utilization will be probably subjected to further processing in order to concentrate these components in nutritional complements.

Further work will include the characterization of the compounds that contribute for the total phenols content and antioxidant activity.

Acknowlegments

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