Influence of processing method on total phenolic and total flavonoid content of marjoram and summer savory

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Summary

The aim of this study was evaluation of changes in total phenolic (TPC) and total flavonoid (TFC) content in marjoram (Majorana hortensis) and summer savory (Satureja hortensis) in dependence on processing. The aerial part of these herbs was harvested three times. The TPC and TFC were evaluated in fresh as well as dried and frozen herbs. TPC was determined by the photometric method using the Folin – Ciocalteu reagent. TFC was measured using a modified colorimetric method using NaNO₂ and AlCl₃ formula. In this study the amount of TPC in marjoram ranged from 6.12 to 6.74 g Gallic acid equivalents (GAE).100g⁻¹ dw in fresh herb, from 3.41 to 4.56 g GAE.100g⁻¹ dw in frozen herb and from 4.58 to 5.12 g GAE.100g⁻¹ dw in dried herb. Summer savory contained from 4.16 to 6.44 g GAE.100g⁻¹ dw in fresh herb, from 2.58 to 3.58 g GAE.100g⁻¹ dw in frozen herb and from 2.70 to 4.80 g GAE.100g⁻¹ dw in dried herb.

In the case of TFC there were in marjoram measured amounts in the range from 3137 to 3717 mg catechin equivalents (CE).100g⁻¹ of (dw) at fresh stage, from 1901 to 2863 mg CE.100g⁻¹ dw at frozen stage and from 3228 to 3773 mg CE.100g⁻¹ dw at dried stage. Summer savory contained amounts in the range from 2359 to 4103 mg CE.100g⁻¹ dw in fresh herb, from 1746 to 2495 mg CE.100g⁻¹ dw in frozen herb and from 1766 to 3649 CE.100g⁻¹ dw in dried herb.

By most harvest terms contained both herbs the highest level of TPC in fresh stage and the lowest in frozen stage. Frozen summer savory and marjoram contained significantly lower TFC than fresh and dried. Drying seems to be better processing method than freezing in the case of flavonoids and phenolics preservation.

Key words: marjoram, summer savory, total phenolic content, total flavonoid content, processing