

Changes in Some Bioactive Content and Antioxidant Capacity of Different Brassica Herbals after Pretreatment and Herbal Infusion

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Abstract : Over the course of herbal production, various pretreatments are performed and some of which have serious effect on the bioactive properties. Especially in the production of herbal tea from fresh herbals, it is considered that elapsed time from blending to last product may affect the bioactive properties and antioxidant contents. Herbal infusion is basically prepared by mixing herbs with hot water for 10-20 min. During the brewing of these herbs, it is supposed to be significant decrease in the antioxidant and phenolics content. The first aim of this study was to evaluate the changes of vitamin C (VitC), total phenolic content (TPC) and antioxidant contents (AO) of two brassica varieties (brussel sprouts and white head cabbage) with different holding time after blending. Second aim of this study was to understand the effect of herbal infusion on VitC, TPC and AO contents. In this study, fresh samples were subjected to 0-30 min holding time after blending. Then, samples was immediately taken to -80 °C and freeze drying process was performed. Herbal infusion was performed for 20 minutes. According to results, VitC contents in brussel sprouts was not changed significantly ($p=0.12$). However, there was a significant decreasing of VitC content in cabbage sample ($p=0.034$). 20 min of brewing caused a significant decrement in VitC of brussel sprouts by approximately 76% (1071 ppm dw), while decline in cabbage VitC content was 87% (531 ppm dw). AO and TPC values of unprocessed cabbage control sample (13791.87 ppm $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ eq. dw and 5301.85 ppm gallic acid eq. dw) were higher than brussel sprouts control samples (11571.75 ppm $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ dw and 5202.76 ppm, respectively). The change in AO and TPC of both brussel sprouts and cabbage samples were not statistically significant at the end of 30 minutes holding time ($p=0.24$ and $p=0.38$). After 20 minutes of brewing, AO content in brussel sprouts significantly decreased by 44% ($p<0.05$). Although, the decreasing of AO in white head cabbage was statistically important ($p=0.034$), decreasing was just 8%. TPC values were found to decrease by 54% in cabbage, while it was 35% in brussel sprouts after herbal infusion. It was observed that 30 min holding time had no statistically important effect on TPC values of both cabbage and brussel sprouts. As a conclusion, herbal infusion has more or less effect on VitC, TPC and AO contents of samples. Therefore, it is important to decrease brewing time. Another result was that there were no significant differences in TPC and AO content of both samples when holding samples 30 min outside after blending. However, this process had significant effect on VitC content of white head cabbage.

Keywords : Antioxidant content, brussel sprouts, herbal infusion, total phenolic content, white head cabbage, vitamin c

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