

Sensory and quality parameters of raw and processed Chicory-Hindbeh, a commonly consumed dark leafy green in Lebanon (*Cichorium intybus L.*) during frozen storage

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This work aimed at assessing the effect of heat treatment and frozen storage on the sensory and chemical properties of chicory with the goal of optimizing the heat pretreatment-storage condition to best preserve the chemical and sensory properties of chicory. Raw, boiled (10 min), blanched (90°C for 60 s) and steamed (for 20 s) chicory samples were produced and stored at -6°C, -12°C or -18°C for 4 months. Chemical analyses (moisture, ash, vitamin C, peroxidase activity, chlorophyll and color) and sensory evaluation (QDA and hedonic evaluation) were conducted. Treatment significantly influenced all chemical variables ($p < 0.001$), except for moisture; and so did freezing temperatures for a-value ($p < 0.001$), chlorophyll-a, peroxidase activity, vitamin C and ash ($p < 0.01$), total chlorophyll, moisture and b-value ($p < 0.05$). Differences were obtained for age for all chemical variables ($p < 0.001$). Treatments affected consumers' acceptability of chicory and QDA showed that boiled chicory was significantly more tender, less chewy and crunchy and needed less time to disintegrate than other samples. PCA showed that PC1 and PC2 separated attributes based on type and intensity of treatments, respectively. It is recommended to use blanching at 90°C for 60 s and freezing at -12°C or -18°C to best preserve the quality of chicory.

Keywords: Chicory, leafy vegetables, blanching, quality, POD, vitamin C, frozen storage.