



Effect of Vacuum Drying on Nutrient Retention of Some Commonly Consumed Herbs

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KEYWORDS Basil. Bioactive Compounds. Drumstick. Leaves. Mint

ABSTRACT The objective of the paper was to evaluate the effect of vacuum drying on nutrient retention of some commonly consumed herbs. Fresh herbs (basil leaves (*Ocimum tenuiflorum*), drumstick leaves (*Moringa oleifera*) and mint leaves (*Mentha*)) were procured from Department of Agronomy, PAU, Ludhiana. The leaves of herbs were cleaned and dried in vacuum oven at 50±5°C, ground to form powder and stored in zip pouches for further use. Herbs were analysed for their proximate composition, minerals (iron, zinc and calcium), vitamins (vitamin C and β -carotene) bioactive compounds (total phenols, flavonoids and antioxidant activity), and anti-nutritional factors (phytin phosphorous and oxalates). The percent increase in protein content after drying was maximum in BL (80.26%) followed by ML (77.91%) and DL (76.13%). A significant decrease ($p<0.01$) was found in moisture content of all herbs after drying while ash, crude protein, crude fat, crude fibre, carbohydrate and energy content of herbs increased significantly ($p<0.01$) after drying. Percent decrease in ascorbic acid content was 49.82, 49.97 and 63.13 percent in BL, ML and DL, respectively. β -carotene content of leaves of fresh herbs ranged from 1489.20-17992 $\mu\text{g}/100\text{g}$ and 1989.01-32100 $\mu\text{g}/100\text{g}$ in dried leaves. Calcium content increased by 74.01, 82.88 and 82.78 percent after drying in BL, ML and DL, while zinc content was 74.26, 73.22 and 68.56 percent in BL, ML and DL. Dried herbs like DL, BL and ML increased in phytate and oxalate content by 30.4, 25.9 and 25.9 percent and 16.8, 26.3 and 12.4 percent, respectively. Percent increase in total phenol content after drying was 48, 49 and 46 percent in BL, ML and DL, respectively. Percent increase in DPPH content after drying was 78.46, 82.82 and 81.80 percent in BL, ML and DL, respectively. Percent increase in TAC by ABTS after drying was maximum in BL (87.85%) followed by ML (86.12%) and DL (74.03%). Range of FRAP for fresh leaves of herbs was 112.05-142.31 TE/100g and it was 843.49-886.23 mg TE/100g in dried leaves. Percent increase was 83.12, 87.36 and 79.27 percent in BL, ML and DL, respectively. Content of bioactive compounds increased significantly ($p<0.01$) after drying. It was concluded that drying of herbs led to significant increase in proximate composition except moisture, in bioactive compounds, in mineral content and β -carotene, while a decrease in vitamin C and moisture content was also observed. Maximum percent increase of phytate content was found in drumstick leaves followed by basil leaves and mint leaves after drying.