Title	Nutrient contents of kale (*Brassica oleraceae* L. var. *acephala* DC.)
Author	Faik A. Ayaz, Robert H. Glew, M. Millson, H.S. Huang, L.T. Chuang, Carlos Sanz and S. Hayırlıoglu-Ayaz
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Abstract

Fructose, glucose and sucrose, as the major soluble sugars and citric and malic acids, as the major organic acids, were identified and determined in kale (*Brassica oleraceae* L. var. *acephala* DC., black cabbage) leaves. Fructose was the predominant sugar (2011 mg 100 g^{-1} dry wt) identified, followed by glucose (1056 mg 100 g^{-1} dry wt) and sucrose (894 mg 100 g^{-1} dry wt). The contents of citric and malic acids were at 2213 and 151 mg 100 g^{-1} dry wt in the leaves. The 16:0, 18:2*n* − 6 and 18:3*n* − 3 fatty acids were the most abundant fatty acids in the leaves. Considering the level of these fatty acids, 18:3*n* − 3 was found to be the highest (85.3 μg g^{-1} dry wt), contributing 54.0% of the total fatty acid content. Linoleic acid (18:2*n* − 6), being the second most abundant fatty acid was present at 18.6 μg g^{-1} dry wt, contributing 11.8% of the total fatty acid content. In the seed oil of kale, 22:1*n* − 9 was the most abundant fatty acid (4198 μg g^{-1} dry wt, 45.7%), with 18:2*n* − 6 (1199 μg g^{-1} dry wt, 12.3%) and 18:1*n* − 9 (1408 μg g^{-1} dry wt, 14.8%) being the second next most abundant fatty acids. The most abundant amino acid was glutamic acid (Glu) which was present at 33.2 mg g^{-1} dry wt. Aspartic acid, which was the second most abundant amino acid, was present at 27.6 mg g^{-1} dry wt and accounted for 10.2% of the total amino acid content of kale leaf. The amino acid content was assessed by comparing the percentages of the essential amino acids in kale leaf versus those of a World Health Organization (WHO) standard protein. The protein of kale leaf compares well with that of the WHO standard. Only one amino acid, lysine, had a score that fell below 100%; the lysine score of kale leaf was 95%. This study attempts to contribute to knowledge of the nutritional properties of the plant. These results may be useful for the evaluation of dietary information.