



Characterization of ornamental pumpkin (*Cucurbita pepo* L. var. *ovifera* (L.) Alef.) genotypes: molecular, morphological and nutritional properties

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Abstract In this study, 36 different ornamental pumpkin (*Cucurbita pepo* L. var. *ovifera* (L.) Alef.) genotypes were analyzed in terms of detailed morphological parameters, molecular properties, and some nutritional features. In this regard, high morphological diversity among the genotypes was observed in terms of plant, leaf and fruit characteristics. Molecular results showed that the genotype which is farthest from the other genotypes of 55% of the difference was determined and fourteen ISSR primers produced, on average, 121 bands in the accessions examined, of which 88 (73%) were polymorphic and Jaccard's similarity coefficient ranged from 0.45 to 0.96. Nutritional analysis showed that *C. pepo* var. *ovifera* seeds are rich in potassium (K) and phosphorus (P) with the concentrations of 8490–21,798 mg/kg and 13,902–28,686 mg/kg, respectively. It was also determined that the pumpkin seed oils had alpha and gamma tocopherols and no β -tocopherols. All samples had β -carotene with the range of 19.63–150.88 mg/kg oil.

Keywords *Cucurbita pepo* var. *ovifera* · Genotype · Diversity · Tocopherol

Introduction

The *Cucurbitaceae* family, which has more than 800 species, members have long been cultivated to be used as food, medicinal and also ornamental purposes. *Cucurbitaceae* family used as food is classified in five genera: *Cucurbita*, *Cucumis*, *Lagenaria* and *Sechium* (François et al. 2006). *Cucurbita pepo* was shown as a highly polymorphic species in terms of fruit characteristics such as fruit size, shape and color, and the cultivars could be grouped into eight morphotypes in two subspecies, ssp. *pepo* and ssp. *ovifera*. Pumpkin, Vegetable Marrow, Cocoselle and Zucchini correspond to ssp. *Pepo* while Scallop, Acorn, Crookneck, and Straightneck correspond to ssp. *ovifera* (Ferriol et al. 2003).

Cucurbita pepo L. (pumpkin, squash, gourd), an economically and nutritionally important member of the *Cucurbitaceae* family, consists of various vegetable crops cultivated worldwide (Paris 2004; Blanca et al. 2012). Besides the evaluation of *Cucurbita* species as vegetables, they are also evaluated in different fields such as alternative medicine because of their medicinal properties and nutritional values. Pumpkin seeds are also an important source of protein

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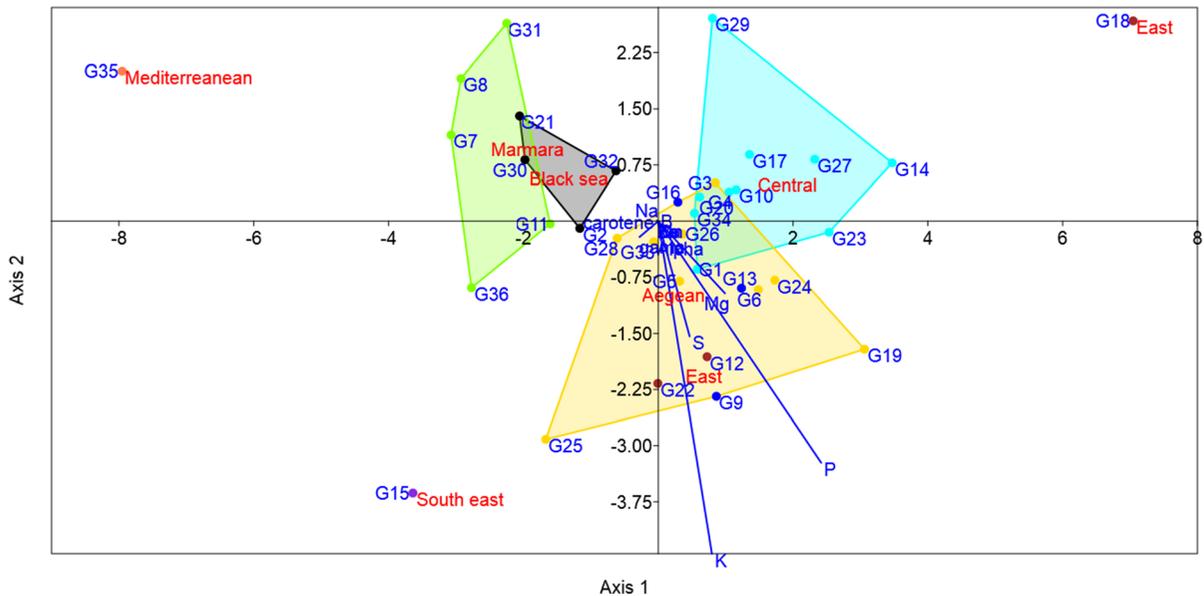


Fig. 2 Linear discriminant analysis image for the distribution of pumpkin genotypes according to mineral and vitamin contents based on regional factors

showed that *C. pepo* var. *ovifera*, which has been neglected to this day, can be considered as an alternative food source due to the vitamin and mineral contents. Studies should be planned to develop genotypes with high seed yield by using current germplasm and consequently, we could conclude that G1, G5, G7 and G8 coded genotypes could be used in future breeding studies.

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Author contributions All authors contributed equally to the conceptualization, methodology and writing of the manuscript.

Compliance with ethical standards

Conflict of interest The authors declare no conflicts of interest.

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