

# Healthy compounds in globe artichoke (*Cynara cardunculus* L. subsp. *scolymus* (L.) Hegi) heads as affected by genotype and harvest time

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Acta Horticulturae 983: 439-444. 2013.

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## Abstract

The edible parts of the globe artichoke (*Cynara cardunculus* L. subsp. *scolymus* (L.) Hegi) plants are the large immature inflorescences harvested in the early stages of their development. More recently, demand has increased because of its reputation as a healthy food. The nutritional and pharmaceutical properties of artichoke heads are linked to their chemical composition, which includes high levels of antioxidant molecules, such as ascorbic acid and polyphenolic compounds (mainly chlorogenic acid), inulin and minerals. Moreover, the nutraceutical properties of the heads are linked to genotypes used and to the harvest time. With the aim to study the influence of genotype and harvest time of globe artichoke heads, four genotypes, two with early production ('Violetto di Sicilia' and 'Violetto di Provenza') and two with late production ('Romanesco' and 'Blanc Hyérois'), were grown. The trial was conducted in south Sicily during 2010-2011. At commercial maturity the heads were collected and in laboratory the nutraceutical characterization was performed. In particular chlorogenic acid and ascorbic acid (HPLC-UV VIS), inulin (HPAEC – PAD), iron and potassium (spectrophotometer) were determined. On the average of genotypes, the ascorbic acid resulted  $42.4 \text{ mg kg}^{-1}$  FW and it was influenced by genotypes and harvest time. In the genotypes with late production the ascorbic acid amount resulted 52% higher than in the genotypes with early production. On the contrary chlorogenic acid amount, which was on the average of genotypes  $1324 \text{ mg kg}^{-1}$  FW, resulted higher in early genotypes ( $1698 \text{ mg kg}^{-1}$  FW) than late ones ( $950 \text{ mg kg}^{-1}$  FW). Inulin content resulted on average  $47.3 \text{ g kg}^{-1}$  FW in late genotypes and  $35.9 \text{ g kg}^{-1}$  FW in early genotypes. The level of iron was not affected by the studied factors, on average were present  $6.85 \text{ mg kg}^{-1}$  FW, while the potassium content resulted higher in late genotypes ( $3936 \text{ mg kg}^{-1}$  FW) than early genotypes ( $3679 \text{ mg kg}^{-1}$  FW).