Characterization of nutritional compounds in ancient tomato varieties

R. Berni[1], M. Romi[1], G. Cai[1], M. Guarnieri[1], M.Nepi[1], C. Cantini[2].

[1]*University of Siena, Department of Life Sciences, via P.A. Mattioli 4, Siena, Italy*
[2]*CNR Ivalsa Follonica, via Aurelia 49, Follonica (GR), Italy*

BACKGROUND

In recent years, food science is moving from the concept of "adequate" to "optimal" nutrition, based on the development of foods that affect psycho-physical health and reduce the risk of disease. Tomatoes contain a significant amount of antioxidant molecules, such as phenols and carotenoids, which possess activity against free radicals, as evidenced by many studies. The Tuscany Region has recovered eight varieties of tomatoes through the 64/04 law, which promotes biodiversity in the region. These varieties come from many years of adaptation to the origin area and may have developed different molecular content following the selection process.

MATERIALS AND METHODS

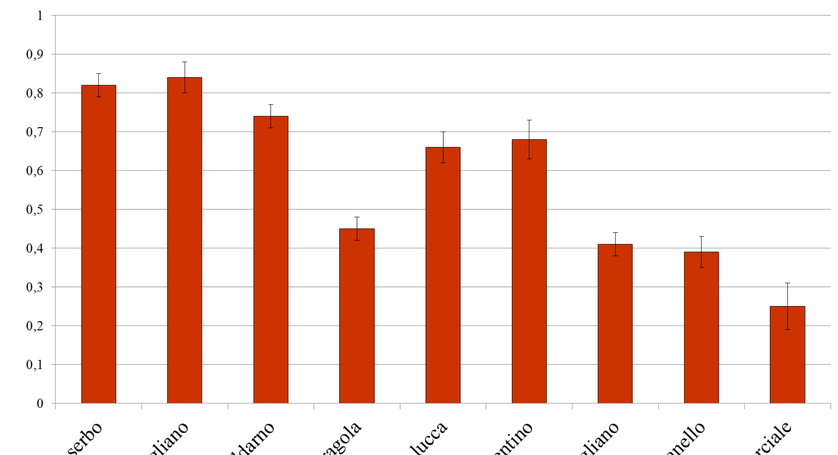
All the fruits analyzed belong to the Tuscan regional repertory and were harvested from plants cultivated in the nursery at CNR Ivalsa of Follonca (GR, Italy). Our study includes commercial varieties for effective data comparison. Harvesting took place at the ripening of fruits. By using colorimetric methods, the total antioxidant content, polyphenols and carotenoids of the 8 indigenous varieties and commercial control were measured. The study also concerned the individual nutraceutical components that contribute to the antioxidant activity of fruits. These analyses were performed using HPLC-based methods.

AIM

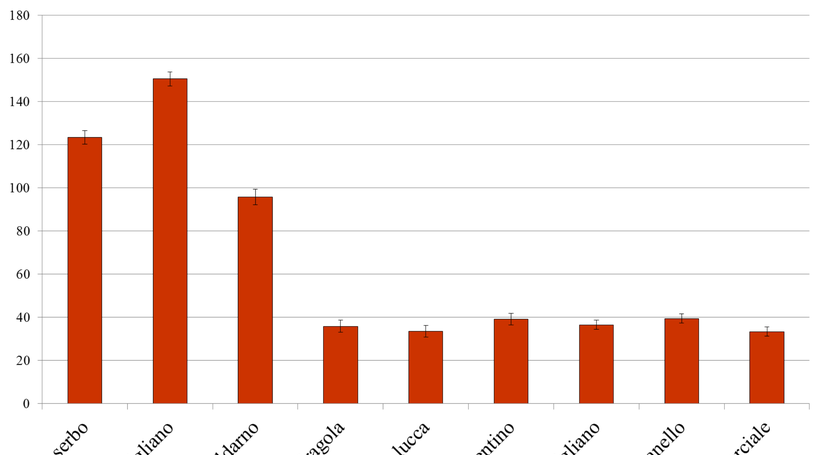
Our study focuses on nutraceutical molecules, which have been identified and quantified in Tuscan tomato varieties. The goal is to promote local biodiversity by studying these molecules increasingly used in medical and pharmaceutical research.

RESULTS

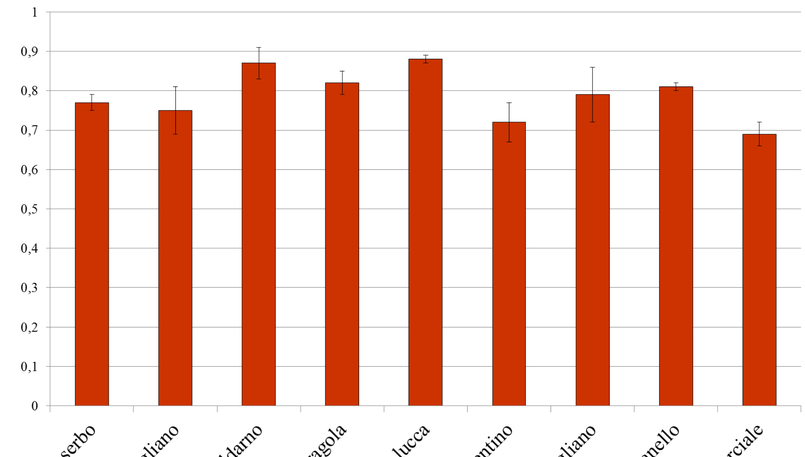
Antioxidants

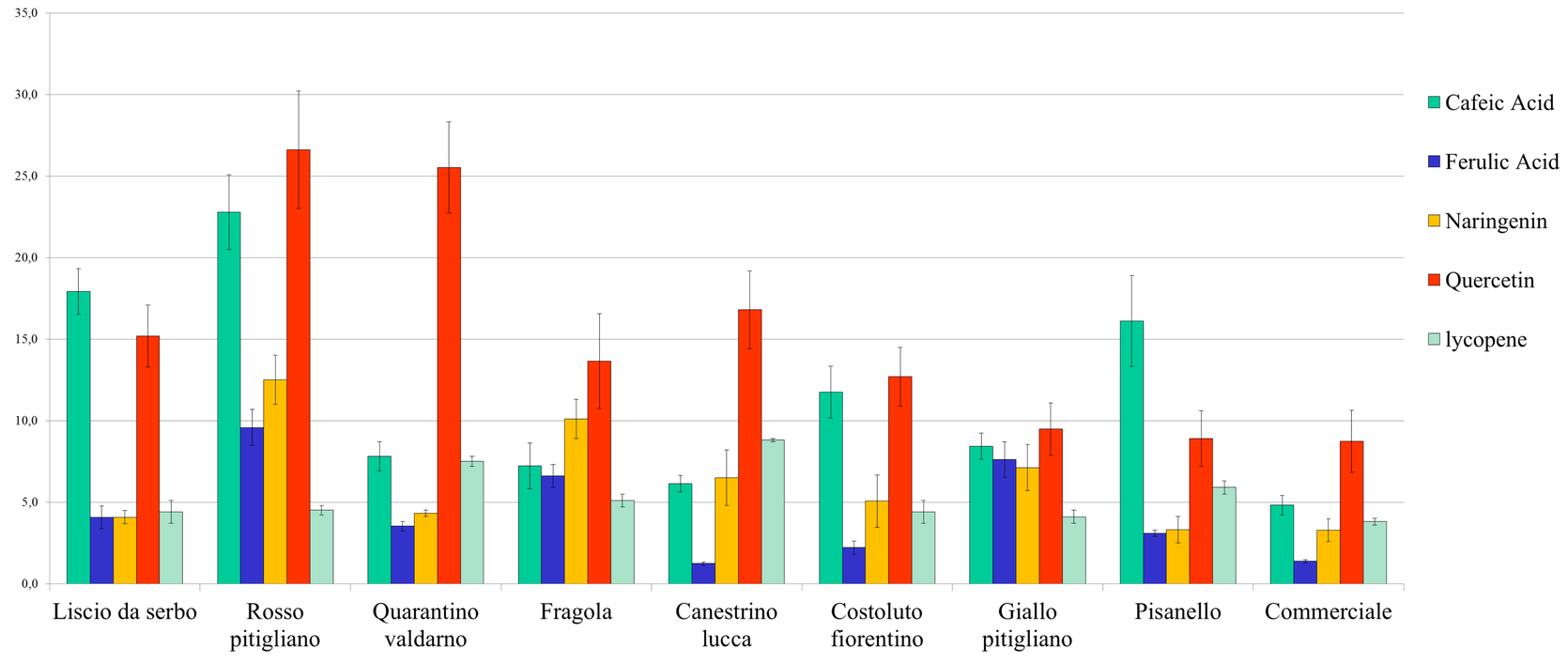


Poliphenols



Carotenoids





CONCLUSIONS

The results obtained by analyzing the natural varieties recovered in Tuscany have shown diversity in the content of various molecular components. Many of the molecules with beneficial activity have been characterized and quantified; their high content confirms the healthy capacities of tomato fruits. Data also show that all ancient varieties have higher nutritional components than commercial control, highlighting the importance of recovery and conservation of local biodiversity.

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