



ABSTRACT SUBMISSION

Title: An ancient pointed maize rich in phlobaphenes: the "Nero Spinoso" from Valcamonica(Brescia, Italy)

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Abstract

Poster abstract

The variety of the species *Zea mays* called "Nero Spinoso" is a traditional crop in the Middle Valle Camonica (Northern Italy) although its cultivation was almost completely abandoned during the second half of the twentieth century due to the introduction of commercial hybrids and to a reduction in the consumption of polenta, for centuries a staple food of the rural population. This work characterized this ancient pigmented maize. A preliminary spectrophotometric analysis revealed the presence of flavonols, phenolic acids and in particular phlobaphenes, probably responsible for ear coloration. Phlobaphenes are reddish insoluble substances synthesized in maize through the flavonoids pathway by the polymerization of flavan-4-ols. In maize this pigment is due to the presence of the *pericarp1* gene (*p1*), a transcription factor belonging to the MYB gene family driving the accumulation of the pigment in the pericarp layer. Genetic and molecular analysis confirmed the presence of the *P1* gene in this landrace and histological analysis confirmed that the pigment is accumulated in the pericarp. In the meantime HPLC analyses also showed the presence of a large amount of carotenoids and, probably thanks to the high amount of pigments, this maize variety showed very high antioxidant ability. Given the chronic disease prevention properties of antioxidant molecules, this variety could be of great interest also from a nutritional point of view. Characterization will allow an accurate description of this landrace with the aim of studying and preserving maize biodiversity in Europe and in particular in Italy. We have collaborated with the municipalities of Esine and Piancogno in the application process needed to register this ancient cultivar on the National Register of conservation varieties with the aim of valorizing this ancient landrace. The "Nero Spinoso" maize was recorded in the National Register in January 2016.

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