

Vitamin E characterization in *Castanea sativa* Mill. cultivars from three consecutive years: a useful authenticity discrimination factor

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Vitamin E profiles of selected (2006-2008) *Castanea sativa* Miller (chestnut) cultivars (*Aveleira*, *Boaventura*, *Judia* and *Longa*) belonging to the Protected Designation of Origin “Castanha da Terra Fria” were evaluated. Vitamin E is an important lipophilic antioxidant with essential effects in living systems against aging¹, strengthening the immune system and reducing cancer risk², reducing viral load in HIV-infected persons³ or in the treatment of Parkinson-syndrome⁴. The analyses were conducted in NP-HPLC coupled to a multiwavelength diode array detector connected with a fluorescence detector⁵. Quantification was based on the fluorescence signal response, using the internal standard method. From the eight possible vitamers (Figure 1), α -tocopherol, γ -tocopherol, γ -tocotrienol, δ -tocopherol and δ -tocotrienol were quantified in all cultivars with high prevalence of γ -tocopherol. A stepwise linear discriminant model was established (Figure 2).

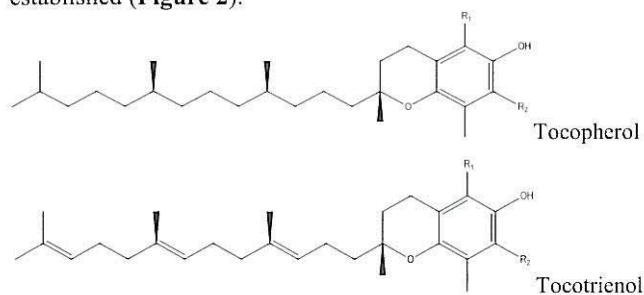


Figure 1. $R_1 = R_2 = \text{CH}_3$: α -vitamer; $R_1 = \text{CH}_3$, $R_2 = \text{H}$: β -vitamer; $R_1 = \text{H}$, $R_2 = \text{CH}_3$: γ -vitamer; $R_1 = R_2 = \text{H}$: δ -vitamer.

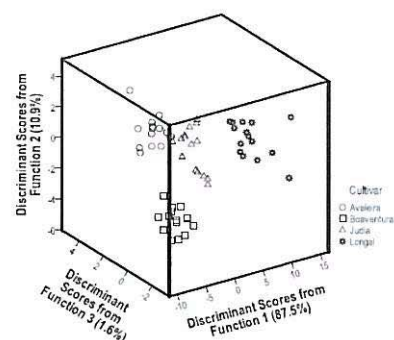


Figure 2. Canonical analysis of chestnut varieties based on tocopherol profiles.

The model allowed the discrimination of cultivars with overall sensibilities and specificities of 100%, for both original grouped data and leave-one-out cross-validation procedures, indicating vitamin E profiles usefulness as a discrimination marker for chestnuts cultivars.

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