

Title Evaluation of L-phenylalanine ammonia-lyase activity and phenolic profile in olive drupe (*Olea europaea* L.) from fruit setting period to harvesting time

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### Abstract

During the olive drupes (*Olea europaea* L.) development we have observed significant correlations ( $r = 0.82$ ,  $r = 0.82$  and  $r = 0.64$  for *Arbequina*, *Farga* and *Morrut* varieties) between L-phenylalanine ammonia-lyase enzymatic activity (PAL, EC 4.3.1.5) and the olive drupe phenolic content. L-Phenylalanine ammonia-lyase activity and the total phenol content in olive drupes suffered a decrease when the maturation processes began. Total phenol content decrease could be used as a differential since it decreased regularly in the *Arbequina* cv. during maturation, while their content in the *Farga* and *Morrut* cv. underwent an important decrease due probably to high variability on ripening index of *Arbequina* variety. Oleuropein could be used as maturation parameter at harvesting period since in *Morrut* and *Farga* cv. showed ten and six times more oleuropein than *Arbequina* cv. It also could be used as a maturation parameter luteolin and luteolin-7-glucoside, which had higher values in *Arbequina* cv. ( $653\text{--}62\text{ mg kg}^{-1}$ , respectively) than in *Farga* ( $222\text{--}25\text{ mg kg}^{-1}$ ) and *Morrut* cv. ( $201\text{--}not\ detected\text{ mg kg}^{-1}$ ) at harvesting period. The data obtained during the fruit development indicate that phenol content and composition, in particular oleuropein, luteolin and luteolin-7-glucoside will be useful for biochemical characterisation of olive drupes of different *O. europaea* L. varieties.