

Influence of flash thermal treatment on volatile compounds of virgin olive oil

Klara Kraljić¹, **Maja Jukić Špika**^{*2,3}, Katarina Filipan¹, Edina Smajić¹, Mia Tokić¹, Sandra Balbino¹, Marko Obranović¹, Mirella Žanetić^{2,3}, Mia Ivanov¹, Zoran Herceg¹, Igor Stuparević¹, Valerija Majetić Germek⁴, Dubravka Škevin¹

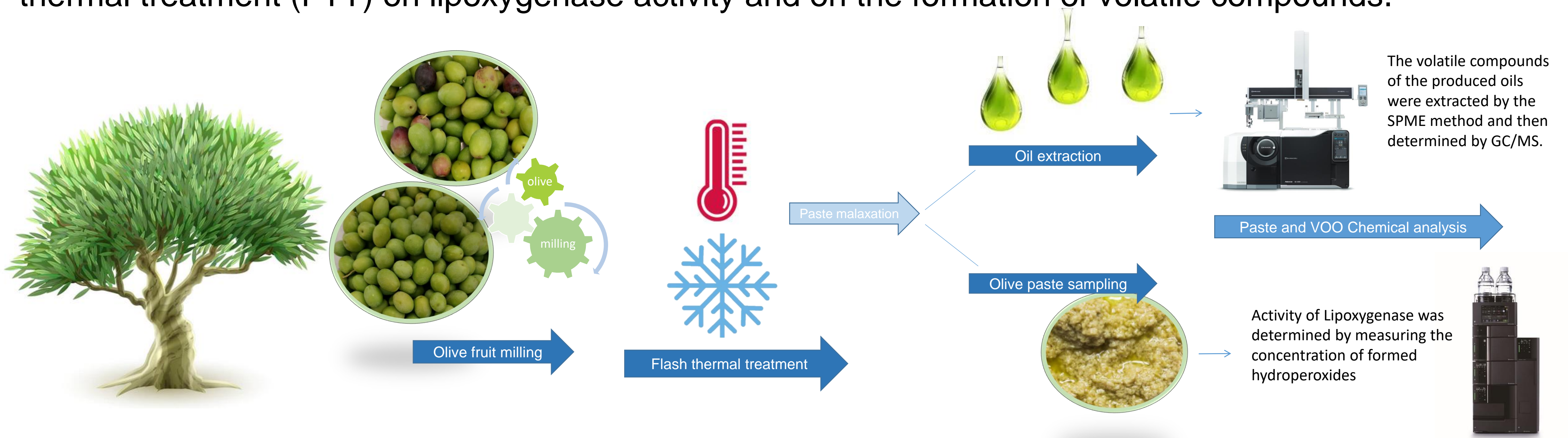
¹University of Zagreb Faculty of Food Technology and Biotechnology, Pierottijeva 6, Zagreb, Croatia

²Institute for Adriatic Crops, Put Duilova 11, 21000 Split, Croatia (Maja.Jukic.Spika@krs.hr)

³Centre of Excellence for Biodiversity and Molecular Plant Breeding, Svetošimunska Cesta 25, Zagreb, Croatia

⁴The Faculty of Medicine, University of Rijeka, Braće Branchetta 20, 51000 Rijeka, Croatia

The nutritional quality and sensory properties of virgin olive oils (VOO) are strongly influenced by a complex endogenous enzyme system. The activity of these enzymes can be influenced by the process conditions during oil production. The aim of the present study was to determine the influence of flash thermal treatment (FTT) on lipoxygenase activity and on the formation of volatile compounds.



Olive fruits from two Croatian cultivars (Istarska bjelica and Levantinka) were used for this experiment. The results show that lipoxygenase activity is cultivar dependent. FTT had no significant effect on lipoxygenase activity, although the trend of decreasing activity with increasing temperature was observed.

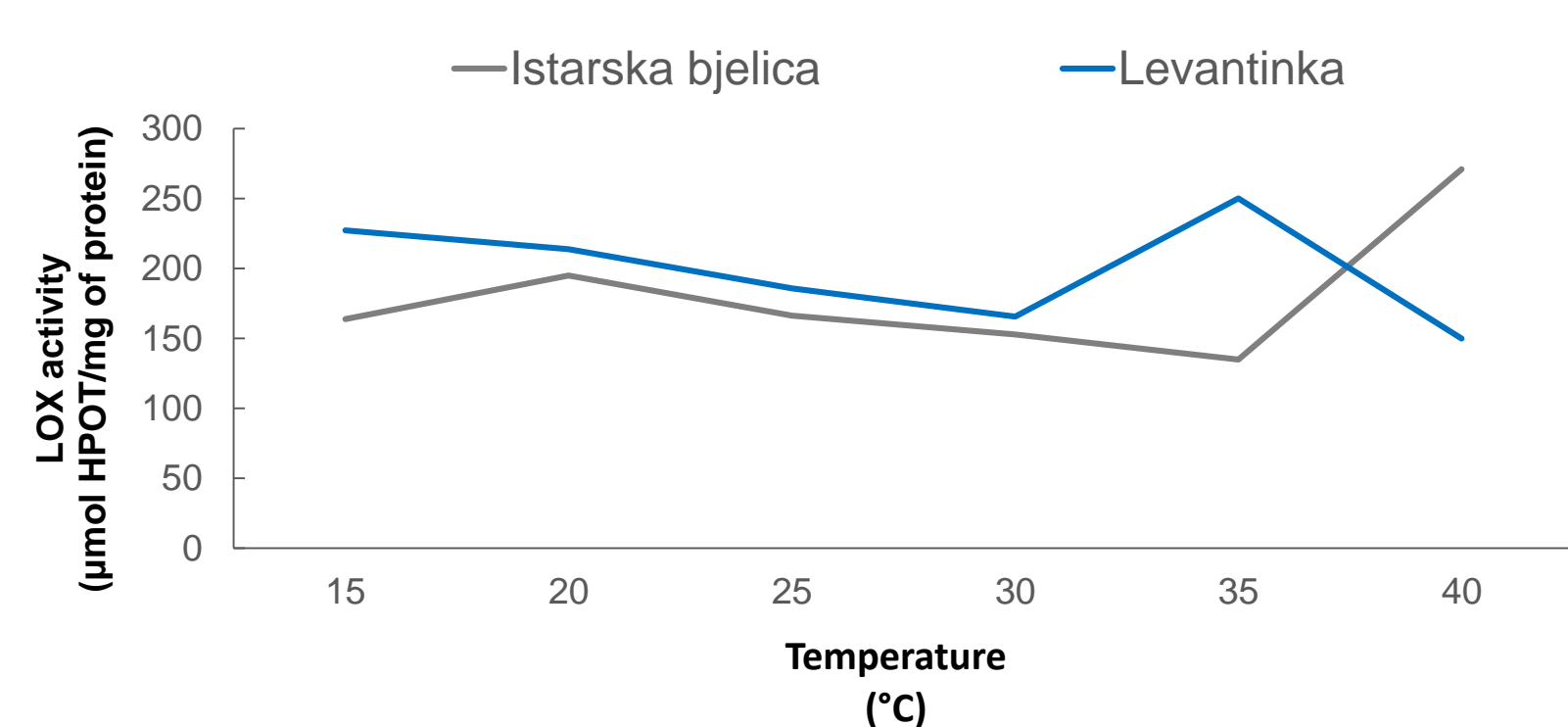


Figure 1. The concentration of secondary oxidation products

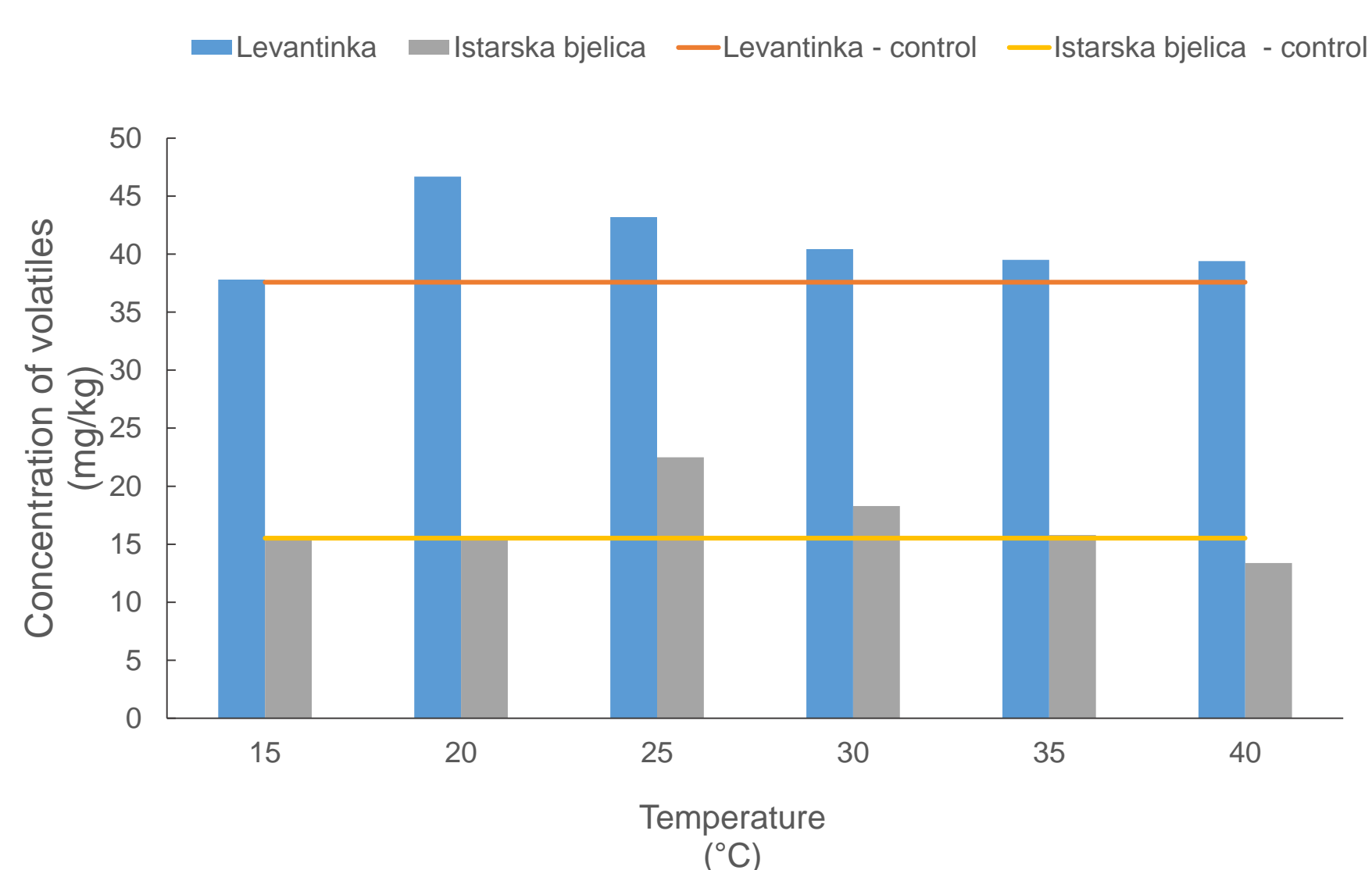


Figure 2. The concentration of lipoxygenase pathway volatile compounds

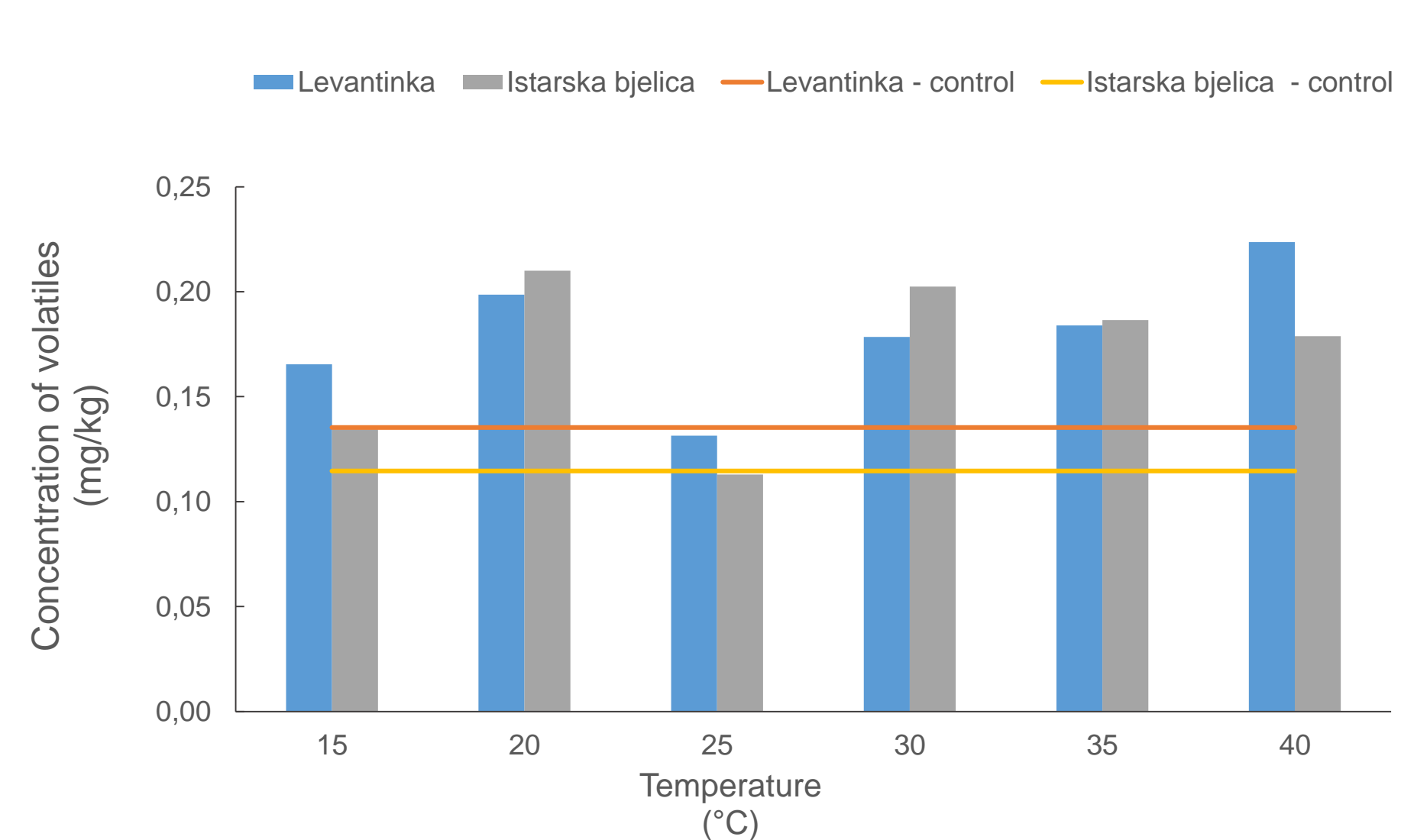


Figure 3. The concentration of secondary oxidation products

Volatile compounds of the produced oils were temperature dependent, and their concentration increases from 15 °C to 20 °C for Levantinka and to 25 °C for Istarska bjelica. Thereafter, it gradually decreases with increasing temperature. The concentration of secondary oxidation products was also analyzed to determine the influence of the temperature on oxidation processes. Neither the cultivar nor the FTT had any effect on the formation of the oxidation products.

