



Effect of the pulsed electric field on olive enzyme activity – a model system experiment

Klara Kraljić, Mia Ivanov, Tomislava Vukušić Pavičić, Zoran Herceg, Sandra Balbino, Niko Jakoliš, Dubravka Škevin

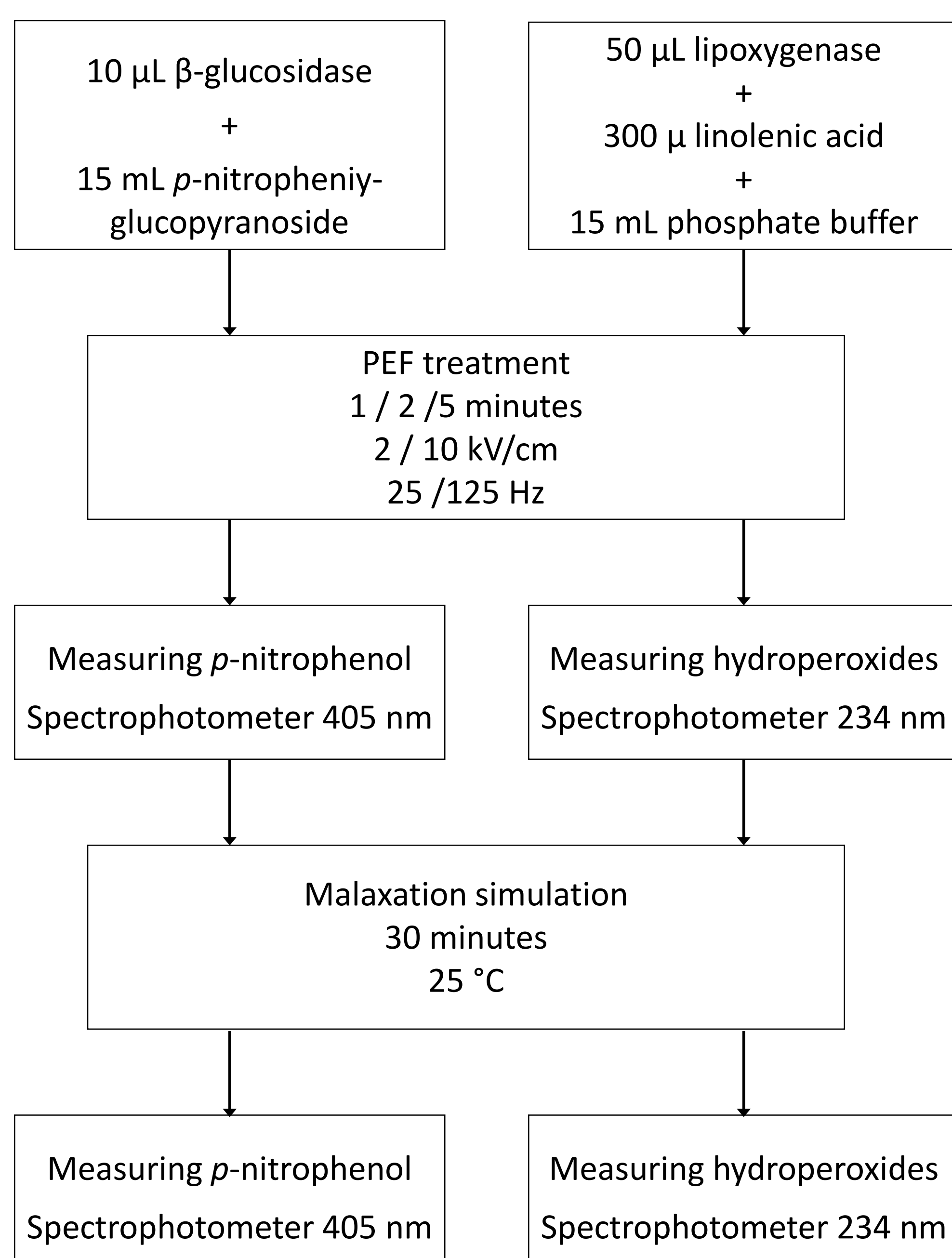
University of Zagreb, Faculty of Food Technology and Biotechnology, Pierottijeva 6, 10000 Zagreb, Croatia

✉ kkraljic@pbf.hr

Aim

Pulsed electric field (PEF) is an emerging new technology that is finding more and more applications in the food sector. Virgin olive oil is no exception, as its application can significantly increase oil yield. However, changes in the chemical composition of virgin olive oil vary from study to study. This could be due to the fact that the chemical composition of the oil is directly influenced by the endogenous enzymes of the olive fruit responsible for the distribution of polyphenols in virgin olive oil and its sensory properties. Therefore, the aim of this study was to determine the effect of PEF on endogenous olive enzymes in model systems.

Materials and methods



Results

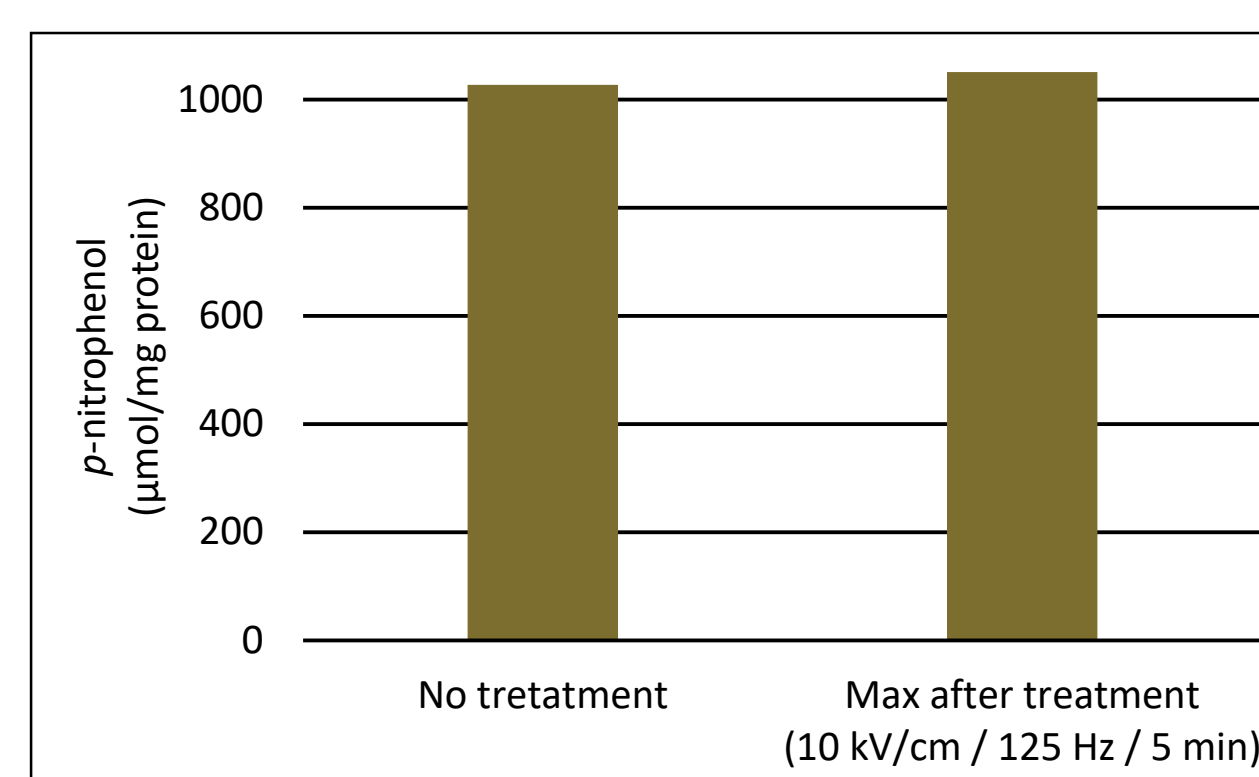


Figure 1 Activity of β -glucosidase after malaxation with and without PEF pre-treatment

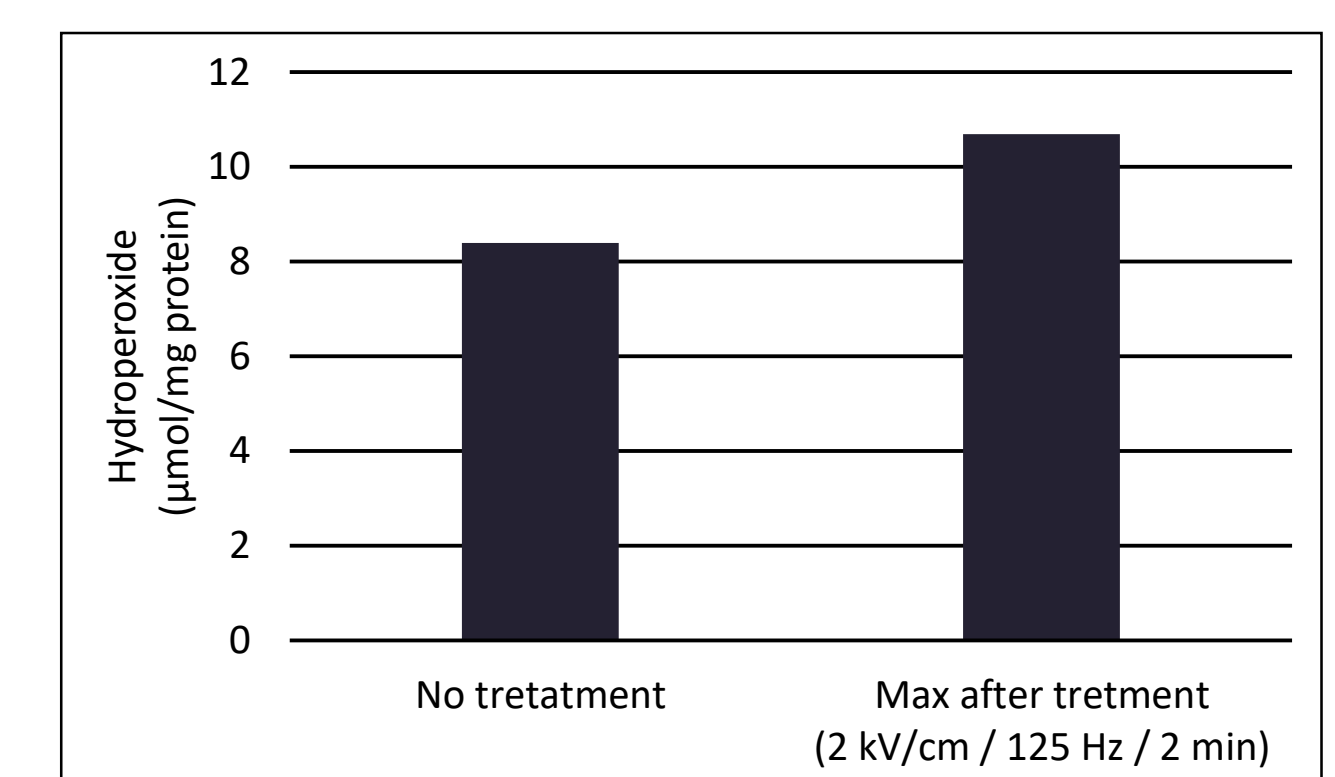


Figure 2 Activity of lipoxygenase after malaxation with and without PEF pre-treatment

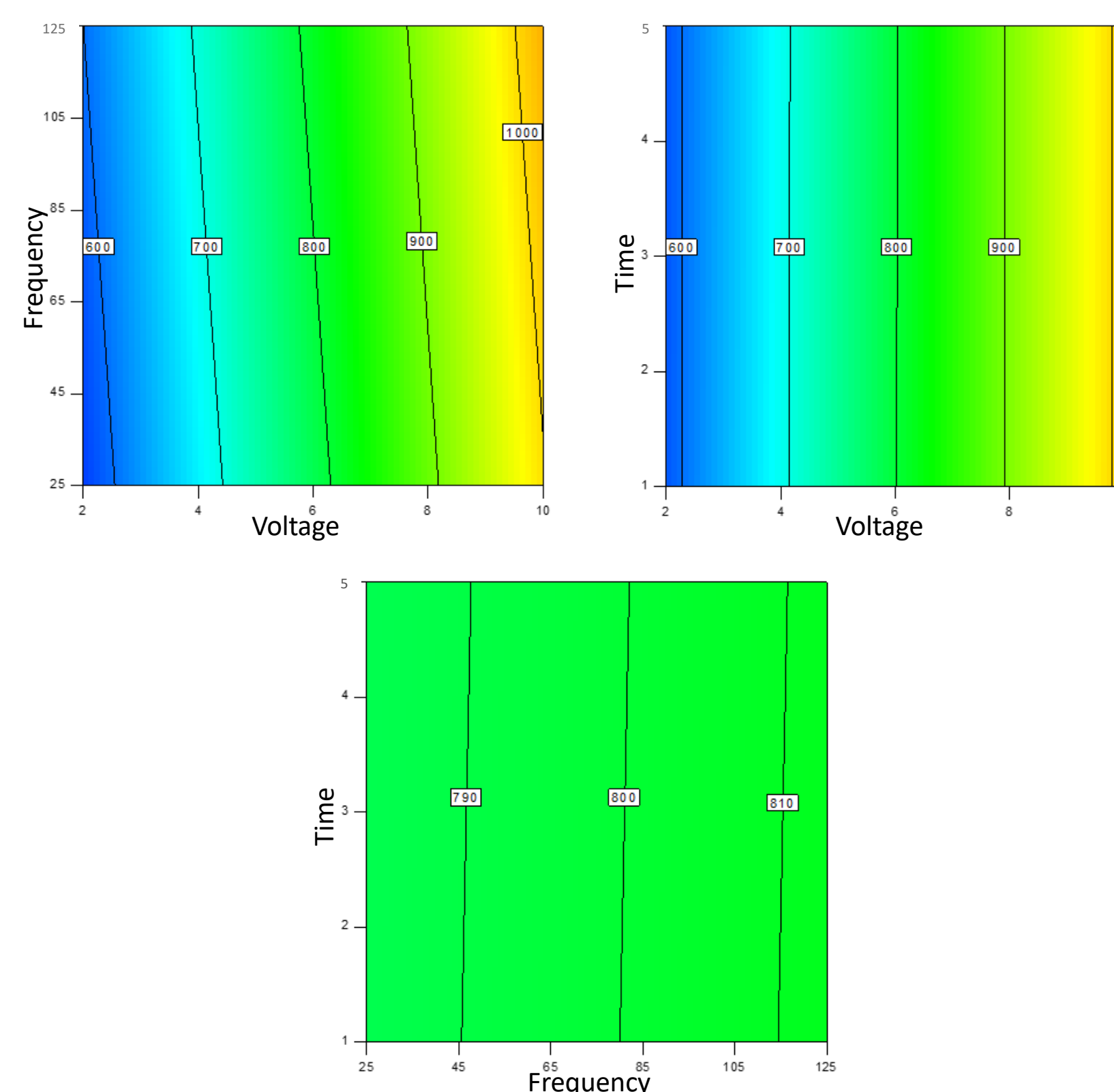


Figure 3 Influence of PEF treatment parameters on β -glucosidase activity after malaxation process

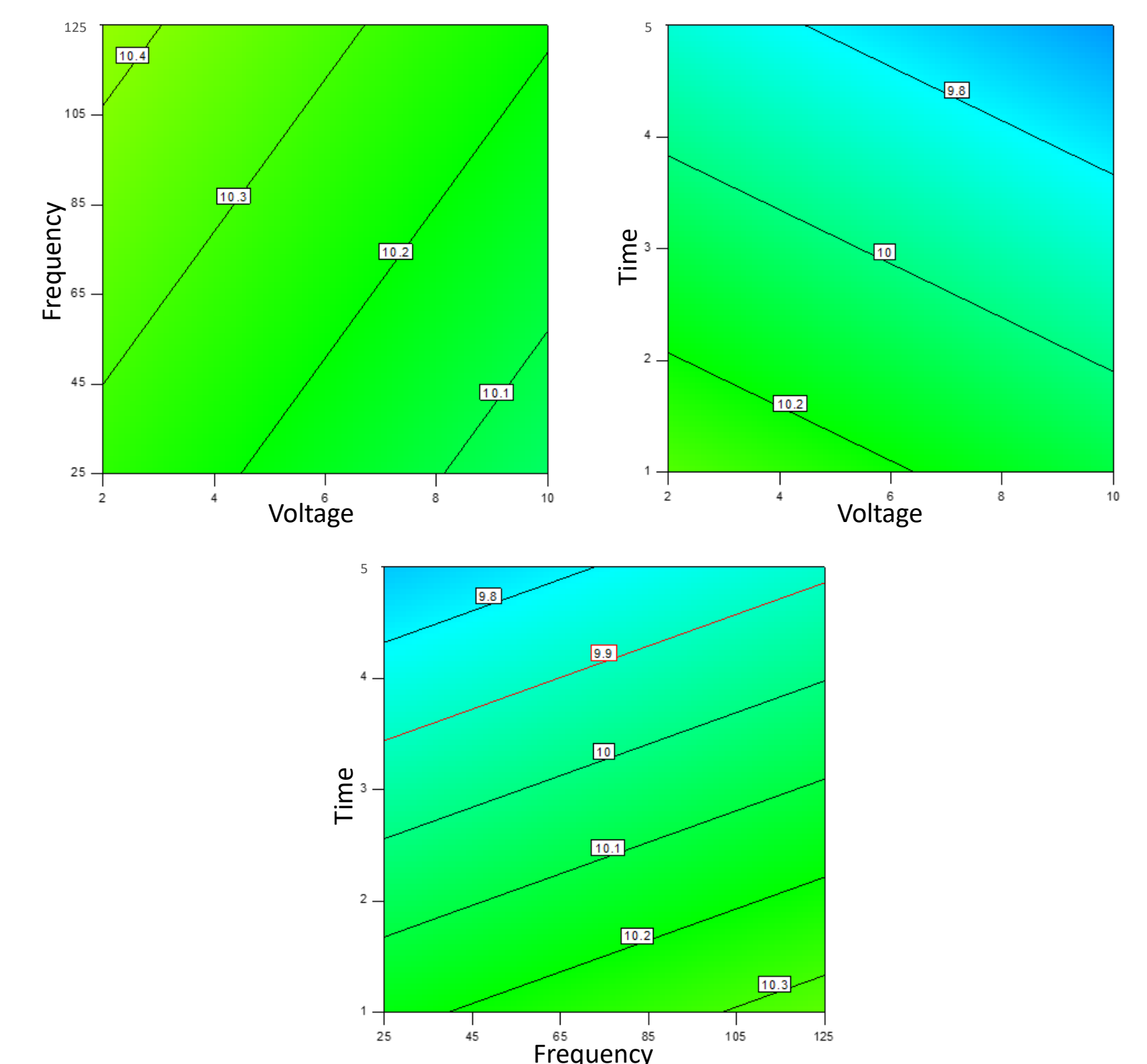


Figure 4 Influence of PEF treatment parameters on lipoxygenase activity after malaxation process

Conclusions

The introduction of PEF in the production of virgin olives as a pre-treatment of malaxation could lead to a higher concentration of phenols and an improvement of the sensory characteristics of the oil due to an increased enzymatic activity.

The β -glucosidase showed greater activity at higher voltage, while lipoxygenase responded better to lower voltage and shorter duration of PEF treatment.

Acknowledgments

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More about the project at

