

The Role of New Technologies in the Production of Quality Olive Oil with a High Percentage of Phenols - Their Contribution to Oxidative EU-STRESS and Health in General

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Within the framework of the application of new technologies in the field of olive processing to produce extra virgin olive oil, the application of optical inspection (artificial vision) is also included. The visual inspection aims to automatically sort the olive fruit to be processed one by one, with the aim of improving the quality of the produced virgin olive oil. With this technique, the system identifies any defects in the olive fruit that may affect the quality of the olive oil, such as insect infestations (e.g., olive fruit fly, olive moth (*Prays olea*, etc.), fungi (*Anthraco-**Colletotrichum spp* e.g.), or harvesting method, means of placement and transport to the oil mill (e.g., plastic bags), but also any deterioration of the fruit due to weather conditions that cannot be predicted, such as frost, drought, etc. At the same time, depending on the color of the skin and if the evaluation criteria have been set in the system, healthy olives can be sorted by stage of ripening and various types of olive oil can be produced from fruits of different stages of ripening, with a different flavor, color, etc. Undoubtedly, the stage associated with the processing of the fruit in the oil mill significantly affects the presence of phenols-polyphenols and, in general, the quality of the olive oil received. Malaxing is considered one of the most critical stages of the olive oil production process. In fact, the malaxing stage is the only discontinuous phase in a continuous processing process. It is therefore a challenge for the industrial olive oil manufacturing sector to design and manufacture machines that will transform the discontinuous malaxing stage into a continuous stage and improve the production capacity of the olive mills. New technologies such as Pulsed Electric Fields (PEF) and ultrasound have been studied and applied to the processing of olive fruit to produce quality olive oil with increased phenolic load (polyphenols) and the improvement of olive oil yield. Also, the reuse of wastewater in the olive mill can contribute to the increase of polyphenols. It is worth noting that the official recognition, in 2012, by the European Food Safety Authority, of the positive effect of polyphenols on oxidative stress, stimulated the interest of science for research and application in the above new techniques-technologies. In this presentation, the above techniques-technologies will be mentioned and the importance of phenols-polyphenols in Oxidative EU-STRESS and in health in general will be emphasized.

Keywords: Olive oil processing; polyphenols; olive oil quality; pulsed electric fields (PEF); European Food Safety Authority; oxidative EU-STRESS.