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[info@prodalricerche.it](mailto:info@prodalricerche.it)

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## PEF TREATMENTS OF DIFFERENT VARIETIES AND MATURITY DEGREES OF APPLES: EFFECT ON JUICE AND POLYPHENOLS EXTRACTION

D. Carullo<sup>1</sup>, M. Turk<sup>2</sup>, G. Pataro<sup>1</sup>, G. Ferrari<sup>1,3</sup>, E. Vorobiev<sup>2</sup>

<sup>1</sup>Department of Industrial Engineering, University of Salerno, via Giovanni Paolo II 132, 84084 Fisciano (SA), Italy

<sup>2</sup>Université de Technologie de Compiègne, Unité Transformations Intégrées de la Matière Renouvelable - EA 4297/ESCOM, Centre de Recherches de Royallieu, BP 20529-60205 Compiègne Cedex, France

<sup>3</sup>ProdAl Scarl - University of Salerno, via Ponte don Melillo, 84084 Fisciano (SA), Italy

The effects of electrical parameters (field strength  $E$  and total specific energy input  $W_t$ ) and of maturity period on juice expression and phenolic compounds present into juices belonging to different cider apple varieties (Marie Menard and Dous Cout Lignée) have been studied. Firstly, an impedance analysis has been performed on different sample geometries (mash and disc) in order to look at the effect of the electrical parameters on the permeabilization degree of tissues. Results coming from this part showed that the disintegration index ( $Z$ ) is just depending on the energy input, whatever the electric field strength applied ( $E = 200-800-1500$  V/cm). After that, apple mash has been PEF treated with constant electric field strength ( $E = 800$  V/cm) and variable specific energy ( $W_t = 1-37$  kJ/kg) and subsequently pressed for 20 min at 3 bar. Results showed that, whatever the specific energy applied during the PEF treatment and whatever the maturity period, the yield of juice collected after the pressing phase has been kept constant and significantly greater than the untreated samples one: this suggests an optimum condition for pressing experiments at the minimum energy input ( $W_t = 1$  kJ/kg). PEF assisted Pressing tests carried out on common dessert apples (Golden Delicious) have underlined a dependency of the juice yield from the electric field strength applied ( $E$ ) while once again it was not possible to see any differences among the treated samples for different values of the specific energy: it arises that the permeabilization index  $Z$  is not a suitable indicator of the pressing efficiency, being just energy dependent. Phenolic compounds of "Marie Menard" apple juices didn't undergo a significant change due to the PEF treatments while it was observed a slight decrease in them for "Dous Cout Lignée" juices, favoured by the PPO enzymatic activity, as the specific energy has increased.