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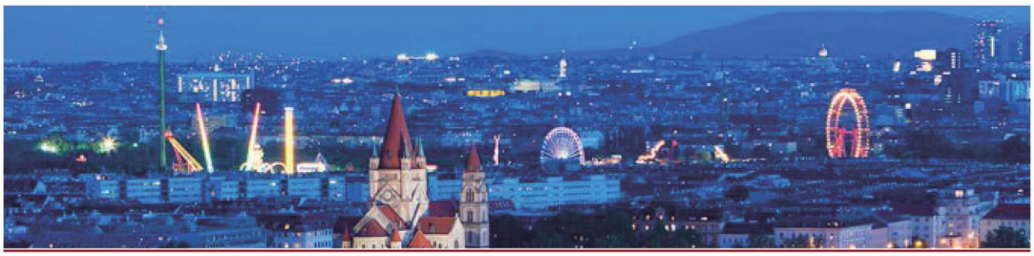

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Agenda

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VALORIZATION OF TOMATO BY-PRODUCTS: INFLUENCE OF OHMIC HEATING PROCESS ON POLYPHENOLS EXTRACTION

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Introduction: Current extraction treatments, may cause degradation of bio-compounds hampering their added value1,2. Phenolic compounds extraction of Lycopersicon esculentum (tomato) by-products were optimized using ohmic heating (OH), as an alternative extraction technology.

Material & Methods: Design of experiments was applied to different extraction time, temperature and ethanol concentration and optimized by response surface methodology. The antioxidant activity, quantitative profile of phenolic compounds and carotenoids were determined.

Results: A significant increase of phenolics content and antioxidant activity were obtained at 70 and 40 °C ($p<0.05$). The best extraction conditions were 70 °C, 15 min and 70% of ethanol; with a total phenolic content of 2.550 ± 0.072 mg gallic acid equivalents/gbiomass.

The effects of electric fields were evaluated (4, 6, 11 V cm-1); at 4 V cm-1 significant changes were observed between conventional extractions and OH treatments ($p<0.05$). The phenolic compounds were identified including, rutin, kaempferol, naringenin, quercetin and chlorogenic acid. A fast OH extraction due to Joule effect, allowed an increase of 77 and 61% in rutin and naringenin extraction, respectively, towards control sample.

Conclusion: In conclusion, OH shows to have a high potential as an environmental-friendly, economical and fast process for the recovery of polyphenols from industrial tomato by-products.

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