



Increases of the Polyphenols Concentration in the Aqueous phase of the Olive Oil Wastes by Biocatalysis

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Abstract:

The intake of natural antioxidants and waste valorisation are issues of great importance for improving human health and achieve a modern and efficient industry. Powerful natural antioxidants can be found in high concentrations in liquid waste from the olive oil industry. In this work, the effect of enzymes to increase the polyphenol concentration of the aqueous phase from olive oil wastes ("alperujo") was studied. The high concentration of fiber in this waste suggest that biocatalysts with cellulases would useful for obtain an increase of the polyphenols

concentration. Two commercial enzymes were used in different rate and concentrations. The total polyphenol content and the presence of free carbonyl group (reducing sugars) was determined by colorimetric methods with the folin-ciocalteu and the 3,5-dinitrosalicylic acid (DNS) reagent, respectively. A liquid-liquid process enzymatic assisted was carry out by one hour at 50°C and increased the phenolic content up to 1000% compared with the same test without enzymes. Use enzymes improve significantly the polyphenol concentration of the aqueous phase in olive oil wastes. The enzymes can be used to catalyze polyphenols extraction process from the olive oil wastes and thus to make the process more efficiently and economically sustainable.

Biography:

Dr. Carlos Zambra has his expertise developing mathematical models and numerical simulations. The main interest are the problems that involve chemical and biochemical reactions and new process such as liquid-liquid extractions, membrane perstraction, pervaporation and membrane distillation. The biocatalysis is a new challenge for our research group but we are supported by recognized experts, Professor Lozano and Cerón from the Murcia University.