

P3 - EXTRACTION AND CHARACTERIZATION OF POLYSACCHARIDES FROM SPENT COFFEE GROUNDS

*Lina F. Ballesteros, Miguel A. Cerqueira, António A. Vicente, José A. Teixeira, Solange I. Mussatto**

Institute for Biotechnology and Bioengineering (IBB),
Centre of Biological Engineering, University of Minho,
Campus of Gualtar, 4710-057, Braga, Portugal.
*solange@deb.uminho.pt

Spent coffee grounds (SCG) are the major waste obtained during the processing of coffee powder with hot water to make instant coffee. Despite the possible interest of SCG to chemical and food industries, there are few studies that highlight their properties and possible applications as raw material. The purpose of the present study was to extract and characterize polysaccharides from SCG. Defatted polysaccharides were isolated by solid-liquid extraction using 4L of 4M NaOH + 0.02M NaBH₄ as solvent, at 25 °C for 4h. The obtained extract was centrifuged, dialyzed and lyophilized. The polysaccharides then obtained were analyzed by high performance liquid chromatography (HPLC), differential scanning calorimetry (DSC) and Fourier transform infrared spectroscopy (FTIR). Additionally, the antioxidant activity and

total phenolic content in the recovered polysaccharides were also determined. According to the results, the total sugar extracted corresponded to 38.9% of the lyophilized material, and 74.93% with respect to the total content of polysaccharides present in SCG. The neutral sugar composition revealed galactose as the dominant sugar (59.79 mol%), followed by arabinose (19.73 mol%), glucose (16.14 mol%), and mannose (4.36 mol%). The recovered polysaccharides presented also antioxidant activity of 0.331 mM Fe(II)/g lyophilized material, and a total content of phenolic compounds of 161.54 GAE/g lyophilized material. In brief, this study presents a methodology to obtain polysaccharides from SCG, which due their biological properties can be used in different biotechnological processes.