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BOOK OF ABSTRACTS



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P253. Antimicrobial activity and biofilm inhibition activity of clean label extracts of Brewer's spent grain

Teresa Bonifacio, Débora Campos, José Teixeira, Manuela Pintado

CBQF – Centre for Biotechnology and Fine Chemistry, Universidade Católica Portuguesa, Porto, Portugal

E-mail: tebonifacio@hotmail.com

Brewer's spent grain (BSG) is one of the most abundant by-products of the brewing industry and nowadays one of the most searched by-products. The amount of BSG wasted may represent a great valorization opportunity, since it has been described for its biological, nutritional and functional activities. Such biological activities have been associated with the presence of several important molecules, e.g. dietary fiber, proteins and phenolics, which show to have a great potential for application.

In this work, hydroethanolic extraction (Solid Liquid Extraction) was applied to BSG and the resulting extracts were studied in terms of antimicrobial activity and biofilm inhibition activity. Inhibition curves were performed as described by Silva et al., (2015) and the assay was evaluated upon five different microorganisms: Methicillin-sensitive *Staphylococcus aureus* (MSSA), *Salmonella enteritidis*, *Escherichia coli*, *Bacillus cereus* and *Listeria monocytogenes*, by the application of different extracts at different concentrations (5, 2.5, 1.25, 0.625 and 0.625 mg/mL). On the other hand, biofilm formation assay was carried out by adapting the protocol described by Costa et al. (2014).

The results of antimicrobial activity showed that all the extracts (for almost all concentrations) had inhibitory effect only against *L. monocytogenes*. The aqueous extract presented the lowest inhibition percentage against all tested microorganisms and it only inhibited *L. monocytogenes* at higher concentrations (5 and 2.5 mg/mL). The ethanolic extract presented the best behaviour among all tested extracts as it showed inhibitory effect against MSSA (5 mg/mL), *B. cereus* (5 and 2.5 mg/mL) and *L. monocytogenes* at all concentrations. For biofilm inhibition assay results showed that extracts had activity against the formation of biofilm by the microorganisms. The difference from these results compared to the results observed in the inhibition curve assay might be due to the fact that the extracts have a better behaviour against the biofilm vitality/viability due to its intrinsic composition.

Therefore, the present results showed a great potential of hydroethanolic extracts of BSG, in order to extract valuable molecules with antimicrobial activity and biofilm inhibition from a abundant by product from food industry.