

Industrial and Food Microbiology and Biotechnology

P-248 - EVALUATION OF ANTIOXIDANT, ANTIMICROBIAL AND PREBIOTIC ACTIVITIES OF A XYLOOLIGOSACCHARIDE-RICH GRAPE POMACE EXTRACT

Joana Costa¹; Ana Vilas-Boas¹; Lorenzo Pastrana²; Lourdes Cabral³; Manuela Pintado¹

1 - CBQF - Centre for Biotechnology and Fine Chemistry, School of Biotechnology, Catholic University of Portugal, Porto, Portugal; 2 - INL - International Iberian Nanotechnology Laboratory; 3 - Embrapa Agroindústria de Alimentos, Rio de Janeiro, Brazil

Background

Grapes are one of the most cultivated fruit crops worldwide, from which more than 70% is intended to wine industry that generates up to 20% of wasted biomass in the form of grape skin, seeds, stems and residual pulp, known as grape pomace (Spanghero *et al.*, 2009; Corbin *et al.*, 2015). Recently, extraction of xylooligosaccharides from lignocellulosic feedstocks has become very common, as these molecules have a potential impact on gastrointestinal health, mainly due to their selectively stimulation of gut microbiota – mainly via prebiotic and antimicrobial activities - but also for their antioxidant activity. The objective of this work was to evaluate the biological properties of a xylooligosaccharide-rich grape pomace extract.

Method

Grape pomace extract was obtained through enzymatic extraction using 100 IU/g of an enzymatic cocktail produced by *Aspergillus niger* 3T5B8, containing xylanase activity. Extraction was performed using citrate buffer with pH 5 as solvent, and extraction was performed at 40 °C for 4 hours, under agitation. The extract was filtered under vacuum and lyophilized after adding 2% (w/w) of maltodextrin. Antioxidant, antimicrobial and prebiotic activities were evaluated.

Results & Conclusions

The xylooligosaccharides-rich grape pomace extract presented low concentration of total phenolic compounds but high antioxidant activity (ABTS and DPPH methods). The extract presented antimicrobial activity against methicillin-resistant *Staphylococcus aureus* at concentration of 3% (w/w), and bacteriostatic activity against *Escherichia coli* and *Salmonella enteritidis* at concentration of 2% (w/w). Prebiotic activity was also evaluated using *Lactobacillus* and *Bifidobacterium* spp and results showed a relevant activity mainly upon *Bifidobacterium* spp.

In conclusion, xylooligosaccharide-rich grape pomace extract presented relevant antioxidant, antimicrobial and prebiotic activities.

References & Acknowledgments

Spanghero M. et al. (2009). Animal Feed Science and Technology 152 (3-4): 243 – 255
Corbin K. R. et al. (2015). Bioresource Technology 193: 76 – 83.

Acknowledgments: This work was supported by National Funds from FCT - Fundação para a Ciência e a Tecnologia through project UID/Multi/50016/2013.

Keywords: xylooligosaccharides, grape pomace, antioxidant, prebiotic, antimicrobial