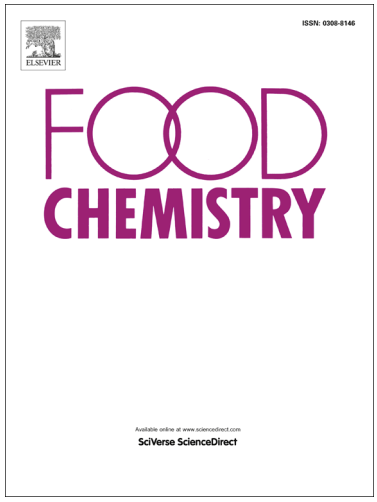

One-step process for producing prebiotic arabino-xylooligosaccharides from Brewer's spent grain employing *Trichoderma* species

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PII: S0308-8146(18)31220-2
DOI: https://doi.org/10.1016/j.foodchem.2018.07.080
Reference: FOCH 23195

To appear in: *Food Chemistry*

Received Date: 27 March 2018
Revised Date: 6 July 2018
Accepted Date: 11 July 2018

Please cite this article as: Amorim, C., Silvério, S.C., Rodrigues, L.R., One-step process for producing prebiotic arabino-xylooligosaccharides from Brewer's spent grain employing *Trichoderma* species, *Food Chemistry* (2018), doi: https://doi.org/10.1016/j.foodchem.2018.07.080

One-step process for producing prebiotic arabino-xylooligosaccharides from Brewer's spent grain employing *Trichoderma* species

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Abstract: Xylooligosaccharides (XOS) are prebiotic nutraceuticals that can be sourced from lignocellulosic biomass, such as agro-residues. This study reports for the first time an optimization study of XOS production from agro-residues by direct fermentation using two *Trichoderma* species. A total of 13 residues were evaluated as potential substrates for single-step production. The best results were found for *Trichoderma reesei* using brewers' spent grain (BSG) as substrate. Under optimal conditions (3 days, pH 7.0, 30ºC and 20 g/L of BSG), a production yield of 38.3 ± 1.8 mg/g (xylose equivalents/g of BSG) was achieved. The obtained oligosaccharides were identified as arabino-xylooligosacharides (AXOS) with degree of polymerization from 2 to 5. One-step fermentation proved to be a promising strategy for AXOS production from BSG, presenting a performance comparable with the use of commercial enzymes. This study provides new insights towards the bioprocess integration, enabling further developments of low-cost bioprocesses for the production of these valuable compounds.

Keywords: Agro-residues; prebiotic; xylooligosaccharides; Brewers' spent grain; *Trichoderma.*

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