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Using brewer's spent grain to formulate culture media for the production of bacteriocins using Patagonian strains

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Abstract

This study evaluates the use of hemicellulosic hydrolyzates, derived from brewer's spent grain (BSG), as a means of generating bacteriocins. The producer strains, *Lactococcus lactis* Tw11 and *Enterococcus mundtii* Tw492, were isolated from animals of Argentine Patagonia. Different culture formulations were tested, and antimicrobial activity was determined against *Listeria monocytogenes* CECT-934. The presence of Tween 80 allowed the release of bacteriocins produced by both strains, with inhibition halos of 15.46 mm ± 0.05 using *L. lactis* Tw11, and 24.47 mm ± 0.09 using *E. mundtii* Tw492. Also, under these conditions the concentration of lactic acid was seen to increase to 3.21 g L^{-1} ± 0.12 using *L. lactis* Tw11, yet remained very similar (2.45 g L^{-1} ± 0.01) with *E. mundtii* Tw492. The activity of the bacteriocins was scarcely affected by additional supplementation with salts. This research suggests that BSG and other similar materials can be used in the production of bacteriocins employing ecofriendly methods.

Keywords: brewer's spent grain, bacteriocins, *Lactococcus lactis, Enterococcus mundtii, Listeria monocytogenes*