Accepted Manuscript

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PII: S0023-6438(18)30359-1

DOI: 10.1016/j.lwt.2018.04.053

Reference: YFSTL 7064

To appear in: *LWT - Food Science and Technology*

Received Date: 14 December 2017

Revised Date: 14 March 2018

Accepted Date: 18 April 2018

Please cite this article as: Liu, L., Qu, X., Xia, Q., Wang, H., Chen, P., Li, X., Wang, L., Yang, W., Effect of *Lactobacillus rhamnosus* on the antioxidant activity of Cheddar cheese during ripening and under simulated gastrointestinal digestion, *LWT - Food Science and Technology* (2018), doi: 10.1016/j.lwt.2018.04.053.

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Abstract: This study was aimed at evaluating *Lactobacillus rhamnosus* for its ability to affect the antioxidant activity of Cheddar cheese during ripening and digestion. The effect of probiotic on the proteolytic patterns and antioxidant activity of Cheddar cheese during ripening was analysed. Three fractions (>10 kDa, 3-10 kDa, and <3 kDa) were separated at the end of ripening of cheese and after digestion. The results demonstrated that *Lactobacillus sps* dominated all stages of ripening cheese and maintained their viability at 8.44 log CFU/g at the end of ripening. The proteolysis concentrations were significantly higher in probiotic cheeses and the antioxidant activity was at its maximum at the end of ripening. Cheeses made with added *Lactobacillus rhamnosus* had significantly higher proteolytic activity and antioxidant activity ($P < 0.05$) than those without probiotics during the entire ripening time. After digestion, the number of bacteria in cheese decreased significantly ($P<0.05$), but the polypeptide content was increased by 37.97% and the DPPH radical scavenging ability and reducing power were increased by 7.46% and

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