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Effect of *Lactobacillus rhamnosus* on the antioxidant activity of Cheddar cheese during ripening and under simulated gastrointestinal digestion

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1                   **Effect of *Lactobacillus rhamnosus* on the antioxidant**  
 2                   **activity of Cheddar cheese during ripening and under**  
 3                   **simulated gastrointestinal digestion**

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

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