Title: ACE-inhibitory activity of peptide fractions of camel and bovine milk fermented by Lactobacillus fermentum PTCC1638

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Abstract: Bioactive peptides release from milk proteins through digestive, microbial or plant enzymes or by fermentation using proteolytic microorganisms such as some lactic acid bacteria (LAB). The aim of this study was to compare the ACE-inhibitory of peptides fractions of fermented bovine and camel milk using Lactobacillus fermentum PTCC 1638. Bovine and camel milk samples were obtained from a commercial dairy farm in Tehran province and Gorgan province, Iran, respectively. Fresh whole bovine and camel milks were pasteurized at 80 ºC for 20 min in water bath and cooled to 43 ºC. Lactobacillus fermentum PTCC 1638 was then inoculated into milk samples and incubated at 37 ºC for 24 h. Fermented milks were stored at 5±1 ºC for 21 days. Samples were tested for bacterial counts and ACE-inhibitory activity of peptide fractions at days 1, 7, 14 and 21 of storage. The results revealed that milk fermentation leads to formation of peptides as the growth factor for LAB and the excess amount of peptides can be accumulated in the medium. In the case of both milks, the lowest IC50 values (the highest hypotensive effect) were observed in the &lt;5 kDa peptide fractions obtained after hydrolysis of milk proteins by Lactobacillus fermentum PTCC 1638. The higher ACE-inhibitory activity of peptide fractions were observed from cultured camel milk peptide fractions than bovine milk counterparts. Furthermore, the lowest IC50 value was obtained 1.073±0.029 mg mL-1 in fermented camel milk after 21 days of storage. Milk fermentation using Lactobacillus fermentum PTCC 1638 is suggested as an economical and practical method to release ACE-inhibitory peptides from milk proteins. Based on our findings, the biological activities of fermented camel milk by Lactobacillus fermentum PTCC 1638 were more pronounced than bovine milk. This showed the potential of fermented camel milk as a novel functional food containing antihypertensive peptides. 

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