

Effect of β -Cyclodextrin on Polyunsaturated Fatty Acids of the Milk Fat

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Milk contains approximately 3.4% total fat. Milk has the most complex fatty acid composition of edible fats. Over 400 individual fatty acids have been identified in milk fat. However, approximately 15 to 20 fatty acids make up 90% of the milk fat. The major fatty acids in milk fat are straight chain fatty acids that are saturated fatty acids (C4:0, C6:0, C8:0, C10:0, C12:0, C14:0, C16:0 and C18:0), monounsaturated fatty acids (C16:1, C18:1), and polyunsaturated fatty acids (C18:2, C18:3). Milk fat contains approximately 65% saturated, 30% monounsaturated, and 5% polyunsaturated fatty acids (PUFA). The main objective of this study was to investigate the effect of the β -cyclodextrin (β -CD) on polyunsaturated fatty acids (PUFA) of the milk fat when the milk is treated with β -CD with the purpose on removal cholesterol from the milk fat. Individual *trans*-linoleic acid did not show differences ($P < 0.05$) between control and treated milk, representing the high amount for the isomer C18:2-*trans*-11 *cis*-15 (0.433 ± 0.087) and C18:2-*cis*-9 *trans*-13 (0.182 ± 0.051). No difference ($P < 0.05$) for the linoleic acid C18:2 (n-6) for control milk (1.836 ± 0.068) and treated β -CD milk (1.819 ± 0.058) was observed. In this study, the three conjugated linoleic acid isomers analysed were C18:2-*cis*-9 *trans*-11, C18:2-*cis*-11 *trans*-13 and C18:2-*trans* 10 *cis*-12. The main CLA isomer biologically active C18:2-*cis*-9 *trans*-11 (rumenic acid) did not show differences ($P < 0.05$) between control milk (0.672 ± 0.080) and β -CD milk (0.663 ± 0.074). β -CD is a effective oligosaccharide for cholesterol removal from milk and does not affect significantly the PUFA of the milk fat.