

# Using Co-extruded Flaxseed Ingredients to Alter the Fatty Acid Profile of Bovine Milk

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There is continuing interest in altering the fatty acid composition of bovine milk in order to make dairy products more appealing to today's health conscious consumer. Omega-3 (n-3) and CLA fatty acids are of considerable interest because of their associated human health benefits. Extruded flaxseed has been shown to improve the levels of these fatty acids in bovine milk, while the dietary inclusion of condensed tannins (CT) has also been suggested as a strategy to protect polyunsaturated fatty acids from rumen biohydrogenation. Developing a feed ingredient that combines extrusion of flaxseed and elevated concentrations of CT may be advantageous for increasing the level of healthy fatty acids in bovine milk. The objective of this research was to evaluate both the use of extrusion and elevated CT concentrations on the yield, composition and fatty acid profile of bovine milk. Eight Holstein cows were used in a replicated 4 x 4 Latin square with 28-d periods. Diets included a control (CTL) and three treatments which incorporated either a non-extruded flaxseed-pea ingredient (RAW), a co-extruded flaxseed-pea ingredient (LPR) or a co-extruded flaxseed and high tannin faba bean ingredient (LPF) at 11% of TMR DM. At the end of each period, milk samples were collected for compositional and fatty acid analysis. No differences in milk yield were observed in this trial. LPR and LPF fed cows compared to CTL and RAW. Milk fat content of cows fed the RAW, LPR and LPF diets was lower when compared to those fed the CTL diet; however, no differences were observed in milk fat yield. Cows fed the RAW, LPR and LPF diets had higher milk concentrations of total n-3 when compared to those fed the CTL diet ( $P < 0.01$ ). The total n-3 content of milk from cows fed LPR and LPF was 1.15% of FAME and 1.18% of FAME, respectively, while those fed RAW only reached concentrations of 0.94%. The concentration of CLA was also higher in the LPR and LPF treatments when compared to both the RAW and CTL ( $P \leq 0.05$ ). No differences in milk fatty acid composition were observed between the LPR and LPF treatments. Extrusion technologies remain a potential strategy for improving the fatty acid profile of bovine milk while the use of high tannins faba beans versus peas in the co-extruded flaxseed products did not provide an additive effect.