DAIRY FOODS WITH LOWERED SATURATED FATTY ACID CONTENT

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Lauric ($C_{12:0}$) myristic ($C_{14:0}$) and palmitic ($C_{16:0}$) are the primary saturated fatty acids representing about 45% of the total saturates in milk fat. These saturated fatty acids have been linked with cholesterol elevating effects in the low density lipoproteins (LDL) in humans (Hayes et al. 1991). In recent years, various attempts have been made to manipulate the fatty acid composition of ruminant milk products, by feeding oilseeds (eg cotton, canola) or commercially available fat supplements (eg Megalac®, Prilled fat)(Banks et al. 1984; Fearon et al. 1994). In each case there was no change in the level of $C_{16:0}$ saturated and C_{18} polyunsaturated fatty acids. In some instances the proportion of C_{18} monounsaturated fatty acid increased, but some of this was due to trans fatty acids formed during bio-hydrogenation (Gulati et al. 1993). The composition of some milk products has also been modified by replacing the fat with partially hydrogenated vegetable oils rich in monounsaturates, which has also resulted in enhanced levels of trans fatty acids. These trans fatty acids are undesirable because they also elevate LDL cholesterol (Mensink and Katan 1990).

Here, we present recent developments in the formulation of dairy products, by feeding fat which is optimally protected from ruminal degradation by encapsulating it in a matrix of aldehyde treated protein (Ashes et al. 1992). Feeding protected canola oilseed supplement (Rumentek®) significantly increased the proportion of the cis monounsaturate $C_{18:1}$(oleic), the polyunsaturates $C_{18:2}$ (linoleic) and $C_{18:3}$ (linolenic) by (39%) and reduced the saturates $C_{12:0}$, $C_{14:0}$, $C_{16:0}$ by 38%. Dairy products containing reduced saturated fatty acids have been assessed in human nutrition trials and shown to reduce the cholesterol in LDL (Noakes et al. 1995). This technology is now available and can be applied to produce a variety of dairy fats with varying ratios of unsaturated to saturated fat, (u/s ratio 0.46 in control milk and up to 0.95 in Rumentek® derived milk). Producers now have the potential to modify the fatty acid composition of milk fat and enhance the nutritional quality and range of dairy products for consumers.

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