

## **Analysis of major fatty acid groups, conjugated linoleic acid and lipid quality indices in selected commercial dairy products in Sri Lanka**

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Milk fat is the most complex natural fat, with over 400 different Fatty Acids (FA). Conjugated Linoleic Acids (CLA), a mixture of octadecadienoic acid isomers mainly *cis*9, *trans*11-C18:2 reportedly show numerous positive effects on human health. Lipid quality indices such as the Atherogenic Index (AI), and the Thrombogenic Index (TI) indicate the health effects of dietary FAs. This study aimed to analyze major FA groups, content of CLA, and lipid quality indices in selected dairy products available to consumers in retail sales. Ten products were selected by a consumer survey conducted in the Western province, considering products with high consumer preferences. Fat was extracted from samples (Modified Folch method) followed by the BF<sub>3</sub>-Methanol *trans*-methylation process to prepare FA methyl esters. GC-FID was used to analyze the FA profile. The Supelco 37 FAME mix was used to identify FA peaks, including CLA. The results revealed variations in major FA groups in dairy products. For fresh cow milk, Saturated, Monounsaturated, and Polyunsaturated FAs were  $68.72 \pm 0.02\%$ ,  $27.40 \pm 0.01\%$ , and  $4.05 \pm 0.01\%$ , respectively. The CLA content in processed dairy products' fat ranged from  $3.2 \pm 0.12$  mg/g (Milk Powder) to  $6.1 \pm 0.03$  mg/g (Butter). Processed cheese has the highest AI ( $3.19 \pm 0.01$ ), followed by butter, condensed milk, ghee, and paneer. The TI was high for butter ( $3.68 \pm 0.01$ ) followed by processed cheese, paneer, and condensed milk. Increases in products' thrombogenic and atherogenic dietary components increase incidences of atherosclerosis and thrombosis. Conclusively, distinct FA profiles and lipid quality indices of dairy products reveal varying health effects that influence consumer health.

**Keywords:** Atherogenic Index, Fatty acids, Gas Chromatography, Thrombogenic Index

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