

Analysis of fat content and fatty acid profile of selected bakery products available in Jaffna district, Sri Lanka

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ABSTRACT

High consumption of trans fatty acids and saturated fatty acids is detrimental to human health. Bakery products are among the main sources of these two types of fatty acids in the diets of many people worldwide. The objective of this study was to determine the total fat content and fatty acid profiles of selected bakery products available in Jaffna markets, with a main emphasis on saturated and trans fatty acid contents. Samples such as bread (n=17), bun (n=17), cake (n=16), pastry (n=12), doughnut (n=4), and bakery fats (n=5) were analyzed. The highest fat content was observed in pastries (21.63%-39.83%) and doughnuts (31.66%-37.17%), whereas the lowest fat content was observed in breads (1.00%-3.43%). All bakery products consisted of a considerable amount of elaidic acid. Highest total saturated fatty acid content was detected in pastries (17.25 g/100 g), whereas the lowest was observed in breads (1.36 g/100 g). Highest total trans fatty acid content was detected in pastries (2.47 g/100 g), followed by doughnuts (1.54 g/100 g), cakes (1.03 g/100 g), buns (0.28 g/100 g) and breads (0.08 g/100 g). Significant variations in the fatty acid composition were observed within and between types of products. Therefore, regulations should be imposed to reduce the content of saturated and trans fatty acids in bakery products in Sri Lanka.

Keywords: bread; doughnut; saturated fatty acids; total fat; trans fatty acids

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INTRODUCTION

Non-communicable diseases (NCDs) continue to pose a formidable global health burden, responsible for nearly three-quarters (74%) of all deaths and an alarming 86% of premature mortality worldwide in 2023 (Varghese et al., 2025). Cardiovascular diseases represent the principal contributor to the global burden of NCDs, responsible for nearly 20.5 million deaths annually (Cesare et al., 2023). In Sri Lanka, ischemic heart disease accounted for 8,550 hospital-reported deaths in 2022 and 8,518 deaths in 2023 per 100,000 population (Ministry of Health Sri Lanka, 2024). One of the major modifiable behavioral risk factors for cardiovascular diseases and other NCDs is the increased consumption of unhealthy diets (WHO, 2025). Therefore, healthy food choices must be emphasized to reduce the burden of NCDs.

Lipids play a vital role in human wellbeing. There is ample evidence that diets high in saturated and trans fats increase the risk of NCDs, whereas diets rich in unsaturated fatty acids reduce that risk (Nykiel et al., 2025). In 2003, in response to evidence showing adverse health effects of trans fat, the US Food and Drug Administration (US-FDA) proposed legislation to reduce trans fat. Subsequently, following the guidelines set forth by the US-FDA, many other countries also formulated their national policies to control the TFA content in their food supply (Umayangani et