Evaluation of Fat Content and Fatty Acid Profile of Selected Bakery Products Available in Jaffna District, Sri Lanka

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Bakery products play a vital role in the daily diet of most Sri Lankans. Solid fats used in bakery products contain a significant quantity of saturated fatty acids (SFAs) and industrially produced *trans* fatty acids (TFAs), which are associated with many human ailments. This study was aimed to determine the total fat content and fatty acid profile of selected bakery products available in the Jaffna district. Samples such as bread (n=17), bun (n=17), cake (n=16), pastry (n=12), doughnut (n=4) and bakery fats (n=5) were randomly collected from bakeries. The fat was extracted from samples using the Goldfisch method using petroleum ether and the fatty acid profile was analyzed using gas chromatography. All experiments were carried out in triplicates. The highest percentage of total fat was detected in pastry (21.63% - 39.83%) and doughnut (31.66% - 37.17%) followed by cake (17.40% - 30.00%), bun (3.30%-10.91%), and bread (1.00%-3.43%). The total SFA content of samples ranged from 46.15-85.34 g/100g of fat and the predominant SFA was palmitic acid. The mean SFA content as expressed in g/100 g of bread, bun, cake, pastry, and doughnut were 1.36, 3.57, 14.83, 17.25, and 17.06, respectively. All pastry samples and 17.64%, 47.05%, 37.5%, 50%, and 80% of bread, bun, cake, doughnut, and bakery fats, respectively contained TFAs. Elaidic acid (C18:1) and linolelaidic acid (C18:2) were detected as the TFAs in the bakery products, whereas bakery fats contained elaidic acid (C18:1) (1.07% - 4.89%) as the TFA. The ranges of TFA content of bread, bun, cake, pastry, and doughnut as expressed in g/100g of serving were 0.08, 0.28, 1.03, 2.47, and 1.54, respectively. In conclusion, except for bread, a significant proportion of all other bakery products consisted relatively high amount of SFAs and TFAs based on the recommendation by the World Health Organization (intake of SFAs and TFAs should be less than 10% and 1% of total energy intake, respectively).

Keywords: *Bakery products, gas chromatography, saturated fatty acids, trans fatty acids*

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