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Abstract

One hundred and twenty random samples of fat rich food products (30 of each cooking butter, margarine, ghee and shortenings) were collected in their natural packages containers from dairy shops, supermarkets and street vendors in Cairo, Giza and Qalyubiah governorates. The collected samples were subjected to organoleptic, chemical and microbiological examinations to determine the prevalence of coliforms, lipolytic bacteria, yeasts and molds, psychrotrophic counts as well as lipolytic activities of isolated molds. Organoleptic inspection of examined cooking butter and ghee samples revealed that 90% and 73.4% were excellent, while 10% and 23.33% were good, respectively. Due to lack of Egyptian as well as international standards for both margarine and shortenings, there is no grading for them. The microbiological examination revealed that the mean values of coliforms in the examined products were 7.57×10^2 , 5.24×10^2 , 1.1×10^3 and 3.23×10^2 , respectively, while the lipolytic count/g of the examined samples were 2.42×10^6 , 2.7×10^5 , 6.25×10^7 and 5.25×10^5 respectively. The mean count of total molds and yeasts were 5.60×10^8 & 2.69×10^9 ; 8.01×10^3 & 9.52×10^4 ; 3.47×10^8 & 4.73×10^8 and 3.10×10^8 & 4.17×10^7 in the examined products, respectively, while the mean values of psychrotrophic counts were 9.17×10^4 , 3.03×10^4 , 3.16×10^4 and 6.01×10^3 respectively. Identification of lipolytic molds revealed that the genera *Aspergillus*, *Penicillium*, *Geotrichum*, *Cladosporium* and *Alternaria* were detected at variable percentages. Chemical examination of examined samples revealed that the mean of acid value was 1.65, 0.45, 0.69 and 0.83, while that of peroxide value was 1.51, 1.70, 1.24 and 2.10, respectively. The fatty acid profile of 20 samples from the examined products (5 each of them) revealed that the mean values of saturated fatty acids were $6^{1.11} \pm 3.74$, 56.3 ± 1.04 , $6^{0.27} \pm 7.72$ and 51.17 ± 2.44 respectively, while that of unsaturated fatty acids were 32.54 ± 1.78 , 43.51 ± 1.05 , 33.72 ± 4.04 and 48.65 ± 1.55 , respectively. Trans fatty acids were detected in the examined samples with mean values of 0.58 ± 0.048 , 0.19 ± 0.015 , 1.01 ± 0.17 and 0.23 ± 0.022 respectively. The economic and public health significance of the obtained results were discussed.

Key words: cooking butter, margarine, ghee, shortenings, coliforms, lipolytic bacteria, yeasts & molds, psychrotrophic organisms, acid and peroxide values, fatty acids profile.