ISSN 2362–0412

ABS-014

Development of Medium Chain Triglyceride Enriched Milkshake for Ketogenic Diet

M.M.D.P. Maheepala[1], K.N. Wijayasekara[1], K.M.W. Rajawatta[1]*

[1] Department of Biosystems Technology, Faculty of Technology, University of Ruhuna

**Corresponding author:* kaushalyaw@fot.ruh.ac.lk

The ketogenic diet (KD) has gained popularity as an effective strategy for weight management. Medium Chain Triglycerides (MCT) are the major fat source of this diet to induce efficient ketosis. However, the products for KD which are enriched with MCT are not accessible in the market. Thus, this study was aimed to develop a MCT enriched milkshake with an optimal ketogenic ratio (KR) and desirable nutritional properties. Four formulations were developed by varying the ratio (%) of soymilk, coconut milk, and MCT oil as 97.7:0:0 (C), 88.77:4.60:4.33 (T1), 86.87:6.92:3.90 (T2), 84.95:9.27:3.45 (T3), respectively. The proportions of the remaining ingredients were kept constant at 2.30%. Sensory, proximate, physicochemical, microbiological analysis were conducted and KR was calculated to assess product quality and suitability for the KD. Sensory evaluation was conducted by thirty semi-trained panellists using a five-point hedonic scale. T2 was selected as the optimal formulation, as it demonstrated significantly higher score for overall acceptability compared to the others. T2 consisted of 60.04% crude fat, 15.82% crude protein, and 22.51% carbohydrates, demonstrating a high-fat and low-carbohydrate profile, suitable for KD. Proximate analysis revealed, crude fiber and crude ash of 0.67% and 0.96% in dry basis, respectively. T2 exhibited a caloric profile in which, fat, protein, and carbohydrate contributed as 77.8%, 9.1% and 13.1% for total energy, respectively, which aligned with KD standards. Ketogenic effectiveness is measured through the KR (Fat/ [Carbohydrate + Protein]), which in this case was calculated as 1.56:1, thus meets the minimum threshold typically required to induce nutritional ketosis. The product shelf life remained at an acceptable level throughout the 4-week refrigerated storage period, as indicated by the steady changes in pH, titratable acidity, and TSS together with microbial counts within safe limits. In conclusion, the formulated milkshake had an optimal KR and desirable nutritional properties that supports the KD.

Keywords: Functional beverage, Ketogenic diet, Ketogenic ratio, Medium-chain triglyceride, Weight management