

IMPROVING HEALTH BENEFITS, NUTRITIONAL VALUE AND QUALITY ATTRIBUTES OF LOW FAT ICE MILK MADE FROM CAMEL'S MILK AND DEFATTED CHIA SEEDS FLOUR

N. Yousif^{1,4}, S. Althobaiti^{1,4}, H. Kesba², H. ELzilal^{1,4}, S. Sabra^{1,4}, S.F. Mahmoud³ and S. Sayed^{1,4}

¹Department of Science and Technology, University College-Ranyah, ³Department of Biotechnology, College of Science,

⁴High Altitude Research Center, Taif University, B.O. Box 11099, Taif 21944, Saudi Arabia

²Zoology and Agricultural Nematology Department, Faculty of Agriculture, Cairo University, Giza 12613, Egypt

ABSTRACT

Defatted chia seeds flour (DCSF) was prepared and its chemical composition and some functional properties were assessed. Nine chocolate ice milk batches were prepared to study the effect of replacing milk fat with DCSF. Control ice milk contained 4% fat, while the other 8 batches were prepared by replacing 25, 50, 75 and 100% of milk fat with DCSF either at the rate of 50 and 100% of substituted fat. Replacement of milk fat with the same amount of DCSF increased specific gravity, weight per gallon and viscosity, while decreased the freezing point of ice milk mixes. On the other hand substitution of milk fat with DCSF increased melting resistance, total protein, ash content and titratable acidity of ice milk treatments. This increase was more obvious by replacing with fat with the same amount of DCSF than those of ice milk treatments made by replacing milk fat with DCSF at the rate of 50% of substituted fat. Total solids, total protein and ash content and acidity of ice milk treatments did not change significantly during storage period. Replacing milk fat up to 50% with the same amount of DCSF increased the overrun and total scores of organoleptic properties, while increasing the rate of replacement above 50% reduced the overrun and scores of organoleptic properties. Ice milk treatment T₂₂ that made with replacing 50% of milk fat with the same amount of DCSF gained the highest total score of organoleptic properties and was most acceptable ice milk treatment. Treatment T₃₁ that made with replacing 75% of milk fat with 37.5% of DCSF exhibited higher total score than control ice milk. Therefore, it is possible to milk a good quality low fat ice milk by decreasing 50% of milk fat with 50% of DCSF and / or reducing 75% of milk fat with 37.5% of DCSF.

Key words: Camel's milk, chia seeds, fat replacers, ice milk