

OP 07-03: Effect of reduced fat and increased protein content in milk powder on Glycemic responses in local dairy cows

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Milk is considered a low glycemic food. Glycemic index (GI) is a measure of the effect of carbohydrates on blood glucose responses. The GI value of typical milk powder is 35 ± 1 (David et al. 1981). This study was designed to determine the Glycemic responses in a protein enriched (36.4%), low fat (4.5%) milk powder formulation made using milk collected from local farmers. Milk was collected from local farmers and spray dried, after reduction of fat and addition of extra whey protein. Healthy volunteers (n=10) consisting of five males and five females between 20-25 years with body mass index (BMI) of 18.5 - 23.5 kgm⁻² were selected. Blood glucose concentration was measured by finger pricked capillary blood samples at fasting, 15, 30, 60, 90, 120 minute intervals after ingestion of the standard (Glucose) and formulated milk powder containing 50g of digestible carbohydrates. GI value was determined as an average of all 10 subjects. Results showed a reduction ($p < 0.05$) in GI with the formulated milk powder was observed. Average Glycemic index was determined to be 12 ± 5 . The average peak reduction of blood glucose response curves was 24.1%. The study concludes that the impact of proteins in milk to reduce blood glucose responses exceeds that of fat. Replacement of fat by dairy proteins can be used to formulate very low GI milk powder.

Keywords: high-protein, low-fat, Glycemic Index, milk