

Glycaemic response to a mixed meal challenge: does camel milk preload confer an advantage?

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Camel milk provides a modest portion of the overall global milk share but is an important source of protein in arid regions. Perceived health benefits include anti-diabetic properties attributed to its unique composition.

We hypothesise that exogenous insulin present in camel milk mediates a hypoglycaemic effect.

In a randomised, double blind crossover study, eleven normoglycaemic individuals were allocated to receive a 300kcal pre-load of camel milk or cow milk ten minutes prior to ingestion of a 500kcal protein and carbohydrate mixed meal. Samples for glucose, insulin and c-peptide were taken at intervals over four hours. Data presented as mean $\pm$ SD.

Baseline glucose in both groups was comparable ($p=0.75$). Compared to camel milk, cow milk preload caused a significant rise in plasma glucose ($p<0.001$). Glucose in both the cow milk and camel milk groups start to drop after a peak at $t=25$ minutes (6.83 ± 0.36 mmol/l cf. 6.45 ± 0.31 mmol/l). Glucose levels in the camel milk group return to baseline at $t=180$ minutes. In the cow milk group there is a period of relative hypoglycaemia (-0.7 mmol/l) compared to baseline which persists beyond termination of the study period.

There was no significant difference between baseline insulin in both groups ($p=0.54$). Peak insulin or insulin area under the curve (AUC) did not differ between the two groups ($p=0.11$ and 0.94 respectively). Furthermore, there was no significant difference in peak c-peptide levels or AUC between the two groups ($p=0.23$ and $p=0.32$ respectively).

In this group of healthy volunteers, exogenous insulin does not appear to play a role as both milks elicit a comparable rise in insulin and c-peptide. Plasma glucose levels demonstrate less variability following camel milk preload compared to cow milk despite similar insulin values. Further study is required to investigate potential mechanisms for the difference in glucose profiles.