

**The effect of high lactose-isomaltulose on cognitive performance of young children. A double blind cross-over design study.**

ABSTRACT

Changes in blood glucose are hypothesized to influence cognitive performance and these changes can be affected by certain nutrients. This double-blind 4-period cross-over study evaluated the effects of a slow-release modified sucrose (isomaltulose) in combination with a high concentration of lactose on cognitive performance of 5-6 year old children. Thirty children received a standard growing upmilk (Std GUM), reformulated growing up milk (Reform GUM), standard growing up milk with lactose-isomaltulose (Iso GUM), and a standard glucose drink (Glucose). The CDR System, a computerised cognitive assessment system, was used to assess various measures of attention and memory of the children at baseline (T=0), 60 (T=1), 120 (T=2), and 180 (T=3) minutes following the intake of test products. Overall, there was a decline in performance over the morning on almost every cognitive task. Children showed better attention following consumption of Iso GUM compared to Std GUM but attention was not significantly different than Reform GUM and glucose. Also, Iso GUM conferred a beneficial effect over both Reform GUM and glucose on sensitivity index of numeric working memory with no difference observed between Iso GUM and Std GUM. Surprisingly, glucose group showed lowest decline in the sensitivity index of spatial working memory and highest speed in picture recognition, although the latter was significantly better than Reform GUM only. For speed of spatial working memory, Reform GUM had the lowest decline but was significantly different only with Std GUM. There was, however, no significant difference among conditions for continuity of attention, speed of numeric working memory and picture recognition sensitivity. Despite the small sample size, the findings are intriguing as carbohydrate composition seems to influence some aspects of cognitive performance such as attention and memory. However, further studies are needed to confirm these findings.

**Keyword:** Isomaltulose; Slow-release carbohydrates; Power of attention;