Influence of test interval length on the variability of glycemic response tests

Project Nr. 382

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Background:
The aim of this study was to investigate whether the washout length between glycemic response tests influences their reliability.

Methods:
Three men and 12 women performed eight identical blood glucose tolerance tests. Four tests were performed on four consecutive days (short interval) and four tests were spread over 20 to 30 days, with 5 to 10 days between the tests (long interval). The glycemic response was defined as the incremental area under the blood glucose response curve (IAUC) over two hours.

Results:
No difference was observed in the coefficient of variation ($p=0.32$) of the IAUC between the short ($CV_{short} = 18.7 \pm 2.3\%$) and long interval ($CV_{long} = 22.4 \pm 2.9\%$). Linear trend analysis did not reveal any drift in the blood glucose IAUC within the short ($p=0.89$) or long ($p=0.20$) interval and there was no difference between the short and long interval ($p=0.67$). The first test did not differ from any of the following tests ($p>0.99$).

Conclusion:
This study provides three results related to the GI methodology. First, the variability of glycemic response tests does not seem to be influenced by the time span between the tests. Secondly, there does not seem to be a systematic drift of the blood glucose IAUC over time, irrespective of the test interval length. Lastly, the first trial of a subject did not differ from any of the following trials. Consequently, familiarization does not seem to improve outcomes of simple GI testing procedures or of blood glucose tolerance assessments. Therefore, this study indicates that for apparently healthy young adults of normal weight, a glycemic response testing schedule over consecutive days is acceptable. This allows for more flexible testing protocols.

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