

[Am J Clin Nutr.](#) 2006 Nov;84(5):1055-61.

Methodologic considerations in the measurement of glycemic index: glycemic response to rye bread, oatmeal porridge, and mashed potato.

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BACKGROUND: Methodologic choices affect measures of the glycemic index (GI). The effects on GI values of blood sampling site, reference food type, and the number of repeat tests have been insufficiently determined. **OBJECTIVE:** The objective was to study the effect of methodologic choices on GI values. Comparisons were made between venous and capillary blood sampling and between glucose and white bread as the reference food. The number of tests needed for the reference food was assessed. Rye bread, oatmeal porridge, and instant mashed potato were used as the test foods. **DESIGN:** Twelve healthy volunteers were served each test food once and both reference foods 3 times at 1-wk intervals in a random order after they had fasted overnight. Capillary and venous blood samples were drawn at intervals for 3 h after each study meal. **RESULTS:** GIs and their CVs based on capillary samples were lower than those based on venous samples. Two tests of glucose solution as the reference provided stable capillary GIs for the test foods. The capillary GIs did not differ significantly when white bread was used as the reference 1, 2, or 3 times, but the variation was lower when tests were performed 2 and 3 times. Capillary GIs with white bread as the reference were 1.3 times as high as those with glucose as the reference. The capillary GIs of rye bread, oatmeal porridge, and mashed potato were 77, 74, and 80, respectively, with glucose as the reference. **CONCLUSIONS:** Capillary blood sampling should be used in the measurement of GI, and reference tests with glucose or white bread should be performed at least twice.

PMID: 17093157 [PubMed - indexed for MEDLINE]

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