

Glycemic, non-esterified fatty acid (NEFA) and insulinemic responses to Watermelon and Apple in type 2 diabetic subjects

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Background: Glycemic Index (GI), Insulin and Non-esterified Fatty Acid (NEFA) responses are useful measures for the biological effects of a carbohydrate diet in relation to diabetes and its complications.

Objective: To determine those indicators in Watermelon and Apple to help in establishing a balanced and better food exchange table for the diabetic patients in Bangladesh. White bread (WB) was used as the reference food.

Design: 13 subjects (8 male and 5 female) under a crossover design, consumed equi-carbohydrate amount of the fruits and bread, with a run-in period of 7 days between the consecutive items. Serum C-peptide was used as the marker of insulin and it was measured by ELISA, HbA_{1c} and NEFA were HPLC & Colorimetric methods respectively.

Outcomes: Watermelon and Apple had almost similar glycemic response which were lower than WB and its reflected in their GI values (Apple 94 ± 19 , Watermelon 92 ± 15). Insulin responses were similar in Apple (0.62 ± 1.13) and in Watermelon (0.45 ± 0.72) and they had a significantly lower Absolute Change (AC) of C-peptide compared to bread ($P=0.001$ in WB vs Apple and <0.001 in WB vs Watermelon). There was a lower NEFA response of Watermelon compared with Apple and WB but the difference was not significant.

Conclusions: a) Equi-carbohydrate of Apple, Watermelon and WB produce almost similar glycemic response. The dynamics of blood glucose changes (avoidance of sharp peak) with Apple, however, makes it a better choice compared to the other two. b) Watermelon maintains a glycemic response similar to Apple and WB at the expense of lower insulin response and may have beneficial effect on dyslipidemia.