

Comparative Study of Glycaemic Impact Analysis in Spices Incorporated Yoghurts

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The prevalence of diabetes mellitus, characterized by high blood glucose levels, is increasing worldwide. Blood glucose level of individuals can be controlled by incorporation of tropical herbs and spices in the diet. The main objective of this study was to manufacture spice oleoresin (*Cinnamomum zeylanicum*, *Curcuma longa*) incorporated high quality novel dairy yoghurts with reduced glycaemic impact. Developed yoghurts were compared with typical dairy yoghurt as the control, mainly for the glycaemic impact after consumption using 16 healthy volunteers in a randomized crossover study. Blood glucose concentration of individuals was measured using a blood glucose monitoring system at fasting state and at 30, 45, 60, 90, 120 min following ingestion. Glucose response curves were plotted for individuals and control was used as the standard. In addition, shelf life, compositional and physiochemical properties were determined for prepared yoghurts. Shelf life for novel yoghurts was estimated as 15 days at $4\pm 1^{\circ}\text{C}$. Developed novel and control yoghurts were within the acceptable standards and significant ($p>0.05$) differences were not observed in compositional and physiochemical properties between them. However, significant ($p<0.05$) reduction was observed in peak blood glucose concentration and area under the curve (AUC) of individuals for both novel yoghurts compared to the control. Percentage peak glucose concentration reduction for cinnamon and turmeric yoghurts were 9.61% and 9.26%, respectively, compared to the control. Mean peak blood glucose concentration for control, cinnamon and turmeric yoghurts were 113.38 ± 6.39 , 102.50 ± 6.00 , 102.88 ± 5.38 mg/dL, respectively, and mean AUC were 11951 ± 523 , 11012 ± 611 , 10941 ± 530 [(mg/dL) x min], respectively. Hence, novel yoghurts with reduced glycaemic impact, were observed to be effective in minimizing the risk of diabetes.

Keywords: Area under the curve, Blood glucose concentration, Cinnamon, Glycaemic impact, Turmeric