Application of Fiber-Enriched Materials from Apple Peels in a Low Glycemic Index and More Fiber Baked Food

Hyeon Gyu Lee, Yujin Jun, In Young Bae, Department of Food and Nutrition, Hanyang University, Seoul, Korea; Suyong Lee, Department of Food Science and Technology, Sejong University, Seoul, Korea

Dietary fiber functions as a modulator having positive effects on glycemic index (GI) of foods. Specially, fruit dietary fiber is more balanced in composition with high total and soluble dietary fiber contents. Therefore, the use of fiber from apple has received increasing attentions in the current society.

This study was carried out to determine the effects of the incorporation of fiber-enriched materials (FEMs) from apple peels for lowering GI to baked foods. Cakes were prepared by slightly modifying AAC method 10–90 and equal amounts of wheat flour were replaced with FEMs for the cakes containing 3 g and 6 g of dietary fiber per serving (100 g). The influence of FEMs on glucose release behavior in cakes during in vitro starch digestion was investigated and predicted GI (pGI) was calculated from starch hydrolysis index (HI) by an equation, pGI = 39.71 + (0.549 X HI).

Increasing the levels of FEMs in cakes had significant impact on starch digestibility, lowering the amount of rapidly digested starch (182→127 mg/g sample) and slowly digested starch (14→11 mg/g sample), and increasing the amount of resistant starch (36→94 mg/g sample). In addition, FEMs decreased HI (118→85%) and pGI (105→86) with increase in the levels of FEMs in cakes. Moreover, this effect was more pronounced in the cake containing FEM 6 g of dietary fiber per serving. Therefore, FEMs showed high potential as fiber-rich ingredients for low GI and more fiber baked foods, consequently extending the application of apple peels in the dietary management of diabetes.