

Replacing carbohydrate with protein and fat affects PBMC metabolites in prediabetes or type-2 diabetes: Comparison with plasma metabolites

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We investigated whether metabolic profiles of PBMC and plasma were affected by decrease in PBMC and plasma lipoprotein-associated phospholipase A2 (Lp-PLA2) activities induced by dietary intervention. 70 nonobese subjects aged 40–70 years ($18.5 \leq \text{BMI} < 30 \text{ kg/m}^2$) with prediabetes or newly-diagnosed type-2 diabetes were randomly divided according to diet that they consumed; control group (n=35) have a usual refined-rice diet, whole-grain group (n=35) have a diet replaced refined rice with whole grains and legumes. All subject consumed the diet for 3 meals per day during 12 weeks. After 12 weeks intervention, changes in fasting glucose, HbA1c, HOMA-IR index, malondialdehyde, oxidized LDL (ox-LDL), LDL particle size, and plasma and PBMC Lp-PLA2 activity in the whole-grain group were significantly different from those of the control group. The PBMC levels of L-leucine, oleamide, lysoPC (16:0), and lysoPC (18:0) in the whole-grain group showed greater decrease compared to those of the control group. Changes in plasma metabolites were not significantly different between the two groups. Changes in PBMC Lp-PLA2 activity positively correlated with changes in glucose, ox-LDL, and metabolites including L-leucine, oleamide, lysoPC (16:0), lysoPC (18:0). Moreover, Changes in PBMC Lp-PLA2 activity negatively correlated with changes in LDL particle size. This study indicated that dietary intervention affects on PBMC Lp-PLA2 activity and metabolites as compared to those of plasma metabolites in subjects with prediabetic or type-2 diabetes.

Biography

Hye Jin Yoo is a graduate school student in PhD course at Yonsei University. She is working in Nutrigenetics/Nutrigenomics laboratory, in Department of Food and Nutrition, lead by Prof. Jong Ho Lee. Her research focus is clinical nutrition. She has published 1 paper in reputed journal.

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