ABSTRACT

THE IMPACT OF FETUIN-A AND PALMITAT ON GLUCOSE TRANSPORTER-4 TRANSLOCATION MEDIATED BY TOLL-LIKE RECEPTOR 4 ACTIVATION IN SKELETAL MUSCLE CELL

Soebagijo Adi Soelistijo

Objective:
To determine the impact of Fetuin-A and Palmitat on TLR4 mediated Glucose Transporter-4 translocation inhibition in normal glucose-tolerance human skeletal muscle cell (h-SkMC)

Material and Methods:
Normal h-SkMC culture were randomly divided into five arms and treated with human-insulin and deoxy-glucose (GI arm), or human-insulin, deoxy-glucose, and FetuinA (GIF arm), or human-insulin, deoxy-glucose and Palmitat (GIP arm), or human-insulin, deoxy-glucose, FetuinA and Palmitat (GIFP arm). Control arm was without any treatment. The effects of insulin, glucose, FetuinA and Palmitat on the expression of TLR4, Akt, GLUT-4 were evaluated by immunofluorescence microscopy. The expression of TNF-α and IL-6 were measured by ELISA assay, and glucose uptake were measured by spectrophotometry assay. Results were obtained and subjected to comparative test and pathway analysis

Results:
Treatment with glucose+insulin (GI), FetA (GIF), Palmitat (GIP), and Palmitat+FetA (GIFP), were all increased TLR4 expression significantly compared to control arm ($p<0.05$) and only treatment with GI and GIF were significantly increased the expression of GLUT-4 compared to control arm ($p<0.05$). All treatment arms and control arm were not significant in altering the glucose transport. Treatment with Palmitat was significantly decreased GLUT-4 expression, independent to TLR4 expression

Conclusion:
Treatment with FetA alone or combination with Palmitat in normal h-SkMC significantly increase the expression of TLR4 but do not alter GLUT-4 translocation and glucose transport. These results provide novel evidence indicating that acute exposure of FetuinA and Palmitat on normal glucose-tolerance h-SkMC do not induce insulin resistance.

Keywords: FetA, Palmitat, TLR4, GLUT-4, TNFα, IL-6, glucose transport.