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Lactoferrin facilitates potential glucose regulation accompanied by the enhancement of incretin effect

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Lactoferrin (Lf) is known for its physiologically pleiotropic properties. Nevertheless, the effects of Lf on glucose regulation have not been adequately analyzed. In the present study, we investigated whether Lf affects potential glycemic metabolism and glucose absorption from the small intestine in rats. Bovine Lf (bLf, 100 mg/kg) was intraperitoneally administered to rats before intravenous glucose injection (intravenous glucose tolerance test, IVGTT) or oral glucose administration (oral glucose tolerance test, OGTT). In IVGTT, bLf pretreatment had no significant effect on plasma glucose or insulin. In OGTT, the bLf group tended to show lower plasma glucose at and after the 15-min peak than the control group and decreased at 180 min. The change in plasma insulin from 0 to 30 min was higher in the bLf group than in the control group. Total plasma GIP was lowered at 60 min by the bLf treatment, while an immediate increase in total plasma GLP-1 was observed within the bLf group undergoing OGTT. In addition, bLf was associated with an increase in the amount of glucose absorbed into the everted jejunum sac. These results suggest that Lf may have a potential to suppress hyperglycemia, accompanied by plasma insulin elevation via transiently accelerating GLP-1 secretion and that Lf even enhances glucose absorption from the small intestine. Lf may have the potential to promote glucose metabolism via the so-called incretin effect.

Biography

Yuta Maekawa is currently a PhD student at The United Graduate School of Veterinary Science in Yamaguchi University. His research focuses on the effect of lactoferrin, a glycoprotein found in various mammalian body fluids, on glucose metabolism.

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