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Dose-Effect of a 6-week treatment with PEP2DIA® on sucrose tolerance in Goto-Kakizaki (GK) rats

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Diabetes means the blood glucose, or blood sugar, levels are too high. With type 2 diabetes, the more common type, your body does not make or use insulin well. Insulin is a hormone that helps glucose get into your cells to give them energy. Without insulin, too much glucose stays in the blood. Over time, high blood glucose can lead to serious problems with heart, eyes, kidneys, nerves, and gums and teeth.

There is a higher risk of type 2 diabetes. If one is older, have obesity, have a family history of diabetes, or do not exercise. Having prediabetes also increases your risk. Prediabetes means that the blood sugar is higher than normal but not high enough to be called diabetes. If one is at risk for type 2 diabetes, they may be able to delay or prevent developing it by making some lifestyle changes

Introduction: Staphylococcus aureus causes a variety of serious infections including meningitis, septicemia, pneumonia, endocarditis, and osteomyelitis. Aureus (MRSA) is of particular concern because of its extensive antibiotic resistance and its association with persistent outbreaks in hospitals and in the community. Besides the relevance of MRSA to public health, methicillin-susceptible S. Aureus (MSSA) is commonly involved in bacteremia and inflammation of the skin and soft tissue (SSTI). The relative high prevalence of pvl genes, a pore-forming toxin associated with SSTI and severe necrotizing pneumonia is a striking feature of clinical MSSA isolates from Africa. This function of African MSSA isolates is of interest as the highly productive community-associated MRSA clones are also characterized by frequent pvl gene carriage.

The study was designed to evaluate the dose-effect of PEP2DIA□, a patented milk protein hydrolysate on glycemic control of type 2 diabetic Goto-Kakizaki (GK) rats treated for 6 weeks from weaning. The 6 week-treatment with PEP2DIA□ (63mg/kg, 88.6mg/kg and 126mg/kg) did not decrease fasting plasma glucose of GK rats, but improved sucrose tolerance with the best effect at the dose of 63mg/kg. Insulin response to sucrose was lower than control after PEP2DIA□ treatment at all the doses tested with the strongest decrease with 63mg/kg of PEP2DIA. This decrease in insulin response seems to be at least in part the consequence of an improvement of the insulin resistance of the GK rats. At the lowest dose tested (63mg/kg), FAS and SREBP-1c gene expressions were significantly decreased in retroperitoneal adipose tissue of GK rats, suggesting that PEP2DIA□ inhibited lipogenesis. PEP2DIA□ treatment induced strong increases in GLP-1 plasma level at all the doses tested but the difference reached significance only with 63 and 126mg/kg of PEP2DIA□. This effect was not the consequence of an inhibition of DPP-4. An inhibition of alpha-glucosidase in duodenum but not in jejunum was observed after the 6-weektreatment with PEP2DIA□, maybe due to a too short time after compound administration for organ sampling. Moreover, in retroperitoneal adipose tissue but not in liver, PEP2DIA□ at the lowest dose tested (63mg/kg), significantly decreased gene expression of both SREBP-1c and FAS, suggesting a beneficial effect on triglyceride accumulation in adipose tissue.

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