

Effects of different sweetener charge-methods on blood glucose level and insulin concentration of mice

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Excessive intake of sugar (sucrose) has been considered to be related to obesity, diabetes mellitus and lipid metabolism disorder, but there are not many reports on blood glucose level and insulin secretion affected by the way of sucrose charge. In this study, we investigated the effects of different types of sweeteners and their charge methods. Male ddY mice were divided into three groups: water-group, sucrose-group, and glucose-group. Furthermore, they were divided into three groups: intraperitoneal administration (IP)-group, oral administration (PO)-group, and free intake-group. The free intake-group was divided into those with and without food, and each drink and food were freely taken for 1 hour. Blood glucose level and insulin concentration were measured at 0, 30, and 60 minutes after the start of the experiment. Blood glucose levels and insulin levels of IP-group, PO-group, and free-intake-group (without food) increased more in the glucose-group than in the sucrose-group. The blood glucose level in the free intake-group (with food) did not differ depending on the type of sweetener, but insulin was secreted in large amounts, and the insulin secretion in the glucose-group was particularly high. Therefore, taking sweet drinks with food promoted insulin secretion as compared to taking sweet drinks alone.