

P019 Characterisation of a high fat fed Goto Kakizaki rat model of Type 2 diabetes.

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The influence of high fat feeding (45% by calories, HF) upon the progression of diabetes was investigated over nine weeks in male Goto Kakizaki (GK) rats. Rats were housed in reverse light conditions, and blood glucose and plasma insulin were measured at 08.00h (“non-fed”) and 12.00h (“prandial”). Energy intake increased acutely on HF diet, but returned to control levels by the study end. Non-fed glucose was elevated initially by HF feeding $8.6 \pm 0.2 \text{mM}$ vs $10.1 \pm 0.2 \text{mM}$ but returned to chow-fed levels by day 30. Prandial glucose increased in both groups, but returned to initial levels after day 10 of HF. Prandial glucose remained above 9mM from day 20 of HF and above 13mM on chow. Non-fed plasma insulin increased from $2.8 \pm 0.3 \text{ng/ml}$ in both groups, to $8.1 \pm 0.7 \text{ng/ml}$ (chow) and $8.5 \pm 0.7 \text{ng/ml}$ (HF) at day 28 whereafter it declined. Islet area decreased with age in chow-fed GK rats but increased in the HF group. GK pancreatic function *in vivo* was assessed in an intravenous glucose tolerance test. Compared to Wistar rats the insulin response was suppressed by 60–70%. These data suggests that in the GK rat, increased islet hypertrophy resulting from HF feeding is unable to increase insulin secretion above that seen in the chow fed GK rat.