

P014 Streptozotocin induces insulin expression in the liver

N.L. Chillingworth, D.Tosh and J.M.W. Slack

*Department of Biology and Biochemistry, University of Bath,
UK*

Streptozotocin (STZ) is commonly used to induce diabetes in mice. We examined its effects on four different mouse strains (DBA/2, C57Bl/6, Balb/c and CD1) with 180mg/kg STZ (n=5) or vehicle (n=2). Blood glucose levels were monitored for 21 days. Mice were killed by cervical dislocation and the liver and pancreas removed for processing.

All mice treated with STZ had significantly raised blood glucose levels that remained elevated for the duration of the experiment. C57Bl/6 mice developed high blood glucose levels more rapidly than Balb/c mice ($p < 0.05$ on day 5). The order of blood glucose levels were CD1=C57Bl/6>DBA>Balb/c mice. Insulin immunohistochemistry showed a depletion of β -cells in the pancreas of all STZ, but not control animals after 5 days ($p < 0.05$).

Real time PCR for insulin on liver RNA showed a low-level baseline expression of hepatic insulin in control animals. Following STZ treatment, liver insulin 1 and 2 levels increased in CD1 and C57Bl/6 mice. In DBA mice only insulin 2 levels increase while Balb/c mice displayed no alteration in insulin levels.

These results indicate that the severity of streptozotocin-induced diabetes will be strain dependent, both because of different degrees of β -cell loss, and because of differences in compensatory insulin synthesis in the liver.