

ENDOCRINE SYSTEM AND METABOLIC DISORDERS

Streptozotocin-induced diabetes

Type 1 diabetes mellitus, also known as autoimmune diabetes, a chronic disease characterized by insulin deficiency due to pancreatic β -cell loss causing hyperglycaemia, whereas type 2 diabetes mellitus is closely linked to the epidemic of obesity, characterized by peripheral insulin resistance and impaired insulin secretion. Both disease are an expanding global health problem^{1,2}. It has been widely reported that streptozotocin (STZ) is capable of producing mild to severe types of diabetes³.

Species: *Rattus norvegicus* (*Sprague Dawley* or *Wistar Hannover*)

Number of animals/group: 10 animals

Route of administration: upon request

Treatment mode: upon request

Main Read-outs: Glucose.

Facultative read-outs: glucagon, insulin, cytokine release, RT-PCR analysis of biomarker messenger RNA and others.

Validation Data

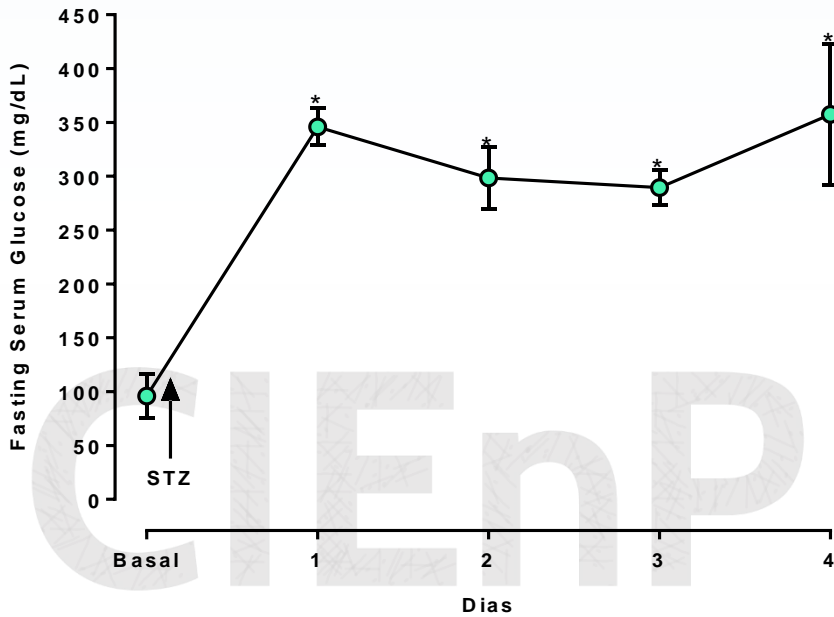


Figure: Fasting serum glucose (mg/dL) (basal levels) and once a day (day 1 to day 4) after streptozotocin administration. Each point represents the mean \pm SEM of 10 animals. For statistical analyses was performed by using *Bonferroni*. * $P < 0.05$ versus basal measurement.

To avoid bias and to allow reproducibility all *in vivo* experiments follow the ARRIVE guidances⁴. Rat colony from Charles River Laboratories is breed and maintained in SPF conditions. The project includes study plan and final report. Raw data are inspected by quality assurance unity. The experimental procedures was previously approved by the CIEnP Committee on the Ethical Use of Animals.

References:

¹Katsarou A, Gudbjörnsdóttir S, Rawshani A, Dabelea D, Bonifacio E, Anderson BJ, Jacobsen LM, Schatz DA, Lernmark Å. Type 1 diabetes mellitus. *Nat Rev Dis Primers*. 2017 Mar 30;3:17016.

²DeFronzo RA, Ferrannini E, Groop L, Henry RR, Herman WH, Holst JJ, Hu FB, Kahn CR, Raz I, Shulman GI, Simonson DC, Testa MA, Weiss R. Type 2 diabetes mellitus. *Nat Rev Dis Primers*. 2015 Jul 23;1:15019.

³Akbarzadeh A, Norouzian D, Mehrabi MR, Jamshidi SH, Farhangi A., Allah Verdi A., Mofidian SMA., Lame B. Rad Induction of diabetes by Streptozotocin in rats. *Indian J Clin Biochem*. 2007 Sep; 22(2): 60–64.

⁴Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting *in vivo* experiments: The ARRIVE guidelines. *PLoS Biol*. 8 (6): e1000412, 2010.