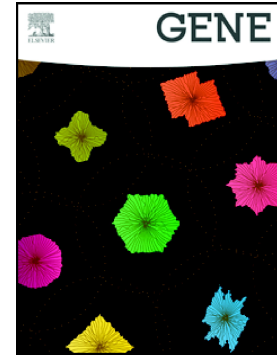


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Comparative analysis on liver transcriptome profiles of different methods to establish type 2 diabetes mellitus models in Guangxi Bama Mini-pig

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ABSTRACT:

Aims/Introduction: Streptozotocin (STZ) is a permanent diabetogenic compound and often used in animal diabetes modeling. The aim of this study is to compare the liver transcriptome of type 2 diabetes models (T2DM) in Guangxi Bama Mini-pig (GBM pig) induced by STZ or Non-STZ.

Research Design and Methods: 22 female GBM pigs were divided into 4 groups. Ctr group (4 pigs): standard diets; DM1_HH group (10 pigs): high fat and high carbohydrate diets; DM2_HS group (4 pigs): high fat and high carbohydrate diets + STZ; DM3_SH group (4 pigs): STZ+ high fat and high carbohydrate diets. Fasting blood glucose (FBG), fasting insulin (FINS), triglyceride (TG) and total cholesterol (TC) were measured monthly. Glucose disappearance rate was evaluated by intravenous glucose tolerance test (IVGTT). Three pigs liver samples as biological replicates in each group were used for transcriptome sequencing analysis.

Results: All pigs injected with STZ were identified as diabetic. But only 4 of 10 pigs in DM1_HH group met the diabetes model standard. The most severe insulin resistance was observed in DM2_HS group. The FBG of DM1_HH, DM2_HS, DM3_SH and Ctr group were 7.20 ± 0.17 , 14.13 ± 0.45 , 7.98 ± 0.99 and 4.43 ± 0.27 mmol/L, respectively; the FINS were 53.67 ± 1.82 , 33.38 ± 2.32 , 49.91 ± 1.50 and 39.78 ± 1.14 mU/L, respectively. Compared with DM1_HH group, liver transcriptome showed that 7 genes were up-regulated while 10 were down-regulated in DM2_HS, 16 genes were up-regulated while 14 were down-regulated in DM3_SH. There were 4

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