SUPPORTING INFORMATION

Hypoglycemic effect of Nitraria tangutorum fruit by inhibiting glycosidase and regulating IRS1/PI3K/AKT signalling pathway and its active ingredients identification by UPLC-MS

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The effect of different components of NTB on glucose consumption in insulin resistant HepG2 cells

The MTT method was used to evaluate the effect of different components of NTB on the survival rate of HepG2 cells. The results showed that NTB, NTB-40, and NTB-95 had no significant effect on the survival rate of HepG2 cells at concentrations up to 100 μg/mL (Fig. S1). Therefore, the concentration was administered at 100 μg/mL in subsequent experiments. According to the reference method, the insulin resistant HepG2 cell model (IR-HepG2) was established to evaluate the effects of different components of NTB on the glucose consumption of IR-HepG2. The results showed that compared with normal cells (Con), the glucose consumption of insulin resistant cells was significantly reduced ($p<0.01$), indicating the success of the insulin resistance model. After administration, the positive drug metformin group (Met) showed an increase in glucose consumption of about 29% ($p<0.01$), with both NTB and NTB-40 significantly increasing glucose consumption ($p<0.05$), and the component NTB-40 had the best effect, increasing by about 25%. Therefore, NTB-40 was selected as the research object to investigate the effect of NTB-40 on blood glucose and its mechanism in diabetes mice.

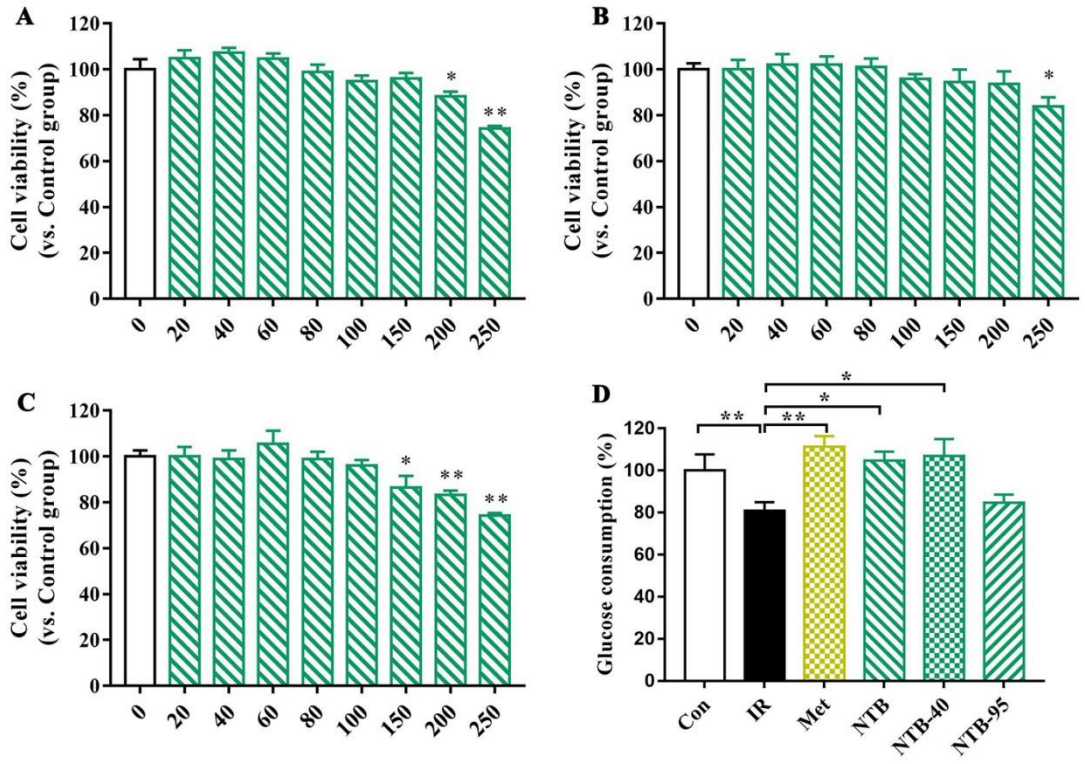

Fig. S1. The effect of NTB (A), NTB-40 (B), and NTB-95 (C) on the survival rate of HepG2 cells. The effects of NTB, NTB-40, and NTB-95 on glucose consumption in insulin resistant HepG2 cells (B). Experimental data are represented as the mean ± SD. (**, $p < 0.01$; *, $p < 0.05$).

Effect of NTB-40 on body weight

The weekly weight changes of diabetes mice induced by high-fat diet STZ in each group were detected. The results were shown in Fig. S2. Compared with Nor mice, the weight of mice in Mod group was significantly reduced after successful modeling (p<0.05). After treatment, the weight of mice in Met group was significantly increased from 4 weeks compared with that in Mod group (p<0.05). The weight of mice in NTB-40-H group was improved from 6 weeks, but there was no significant difference.

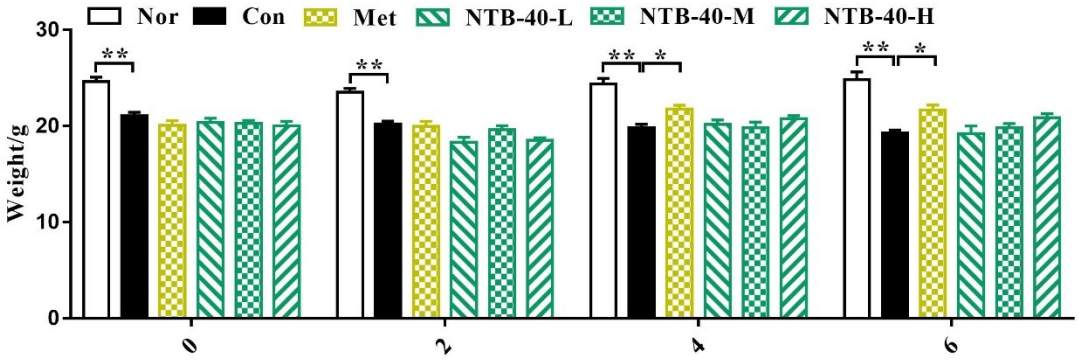

Fig. S2. Effect of NTB-40 on body weight of diabetes mice. Experimental data are represented as the mean ± SD. (n =8, **, $p < 0.01$; *, $p < 0.05$).

Effects on histopathological changes of pancreas

Type 2 diabetes can cause pancreatic islet injury. The HE staining results of pancreatic tissue are shown in Fig. S3. Compared with the No group, the Mod group showed signs of islet rupture, atrophy, decreased number of islet cells, and irregular shape. Compared with Mod group, the degree of pancreatic islet rupture in Met group and NTB-40 group was reduced, and the shape of pancreatic islet was relatively regular, indicating that NTB had a certain protective effect on pancreatic islet injury in diabetes mice.

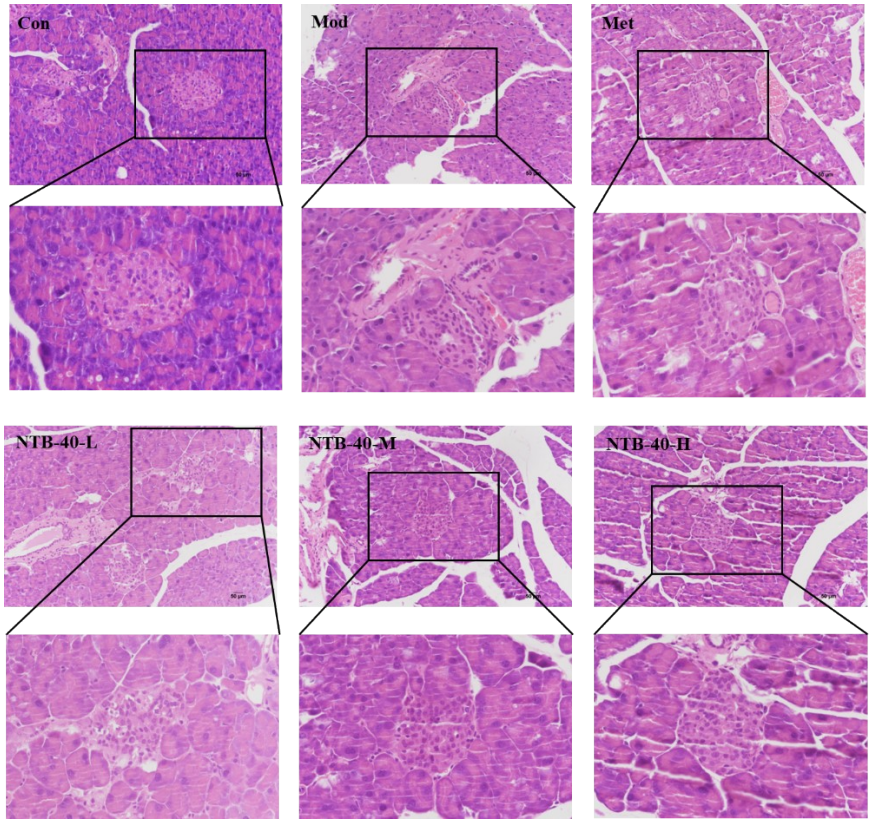

Fig. S3. Histopathological changes in the pancreas (HE staining 200).

Fig. S4. Western blot of AKT

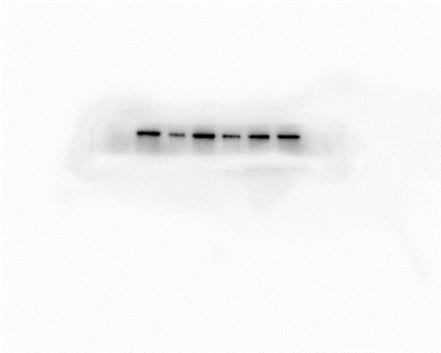

Fig. S5. Western blot of p-AKT

Fig. S6. Western blot of PI3K

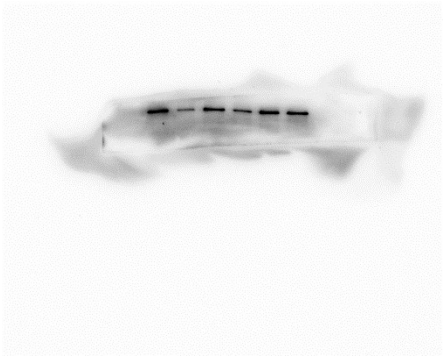

Fig. S7. Western blot of p-PI3K

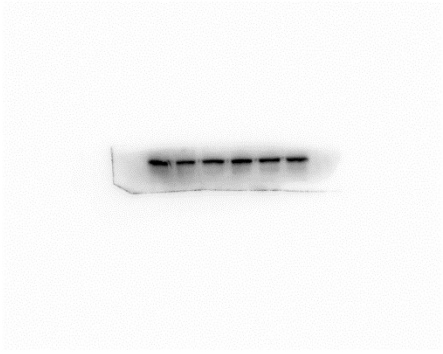

Fig. S8. Western blot of IRS1

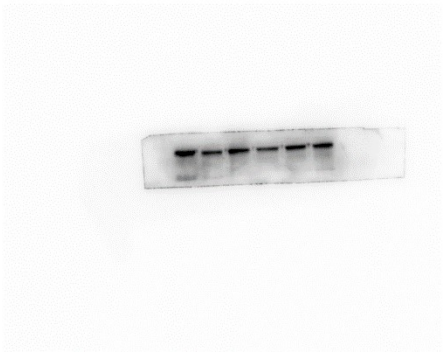

Fig. S9. Western blot of p-IRS1

Fig. S10. Western blot of FOXO1

Fig. S11. Western blot of p-FOXO1

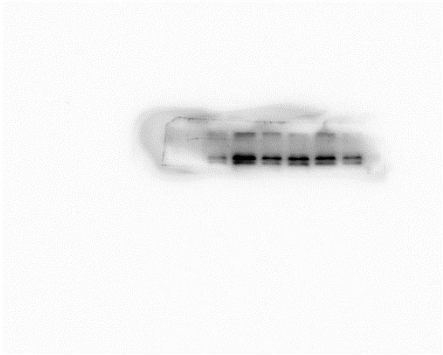

Fig. S12. Western blot of GSK3β

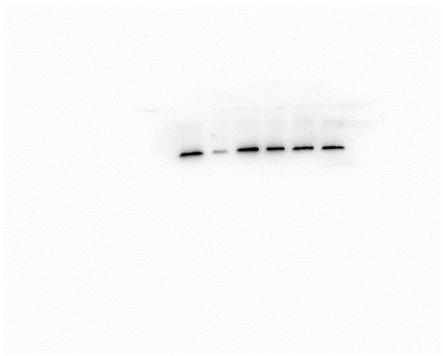

Fig. S13. Western blot of p-GSK3β

Fig. S14. Western blot of GLUT4

Fig. S15. Western blot of Acting