Designing a late-stage type 2 diabetes mellitus model with brain insulin resistance and oxidative stress

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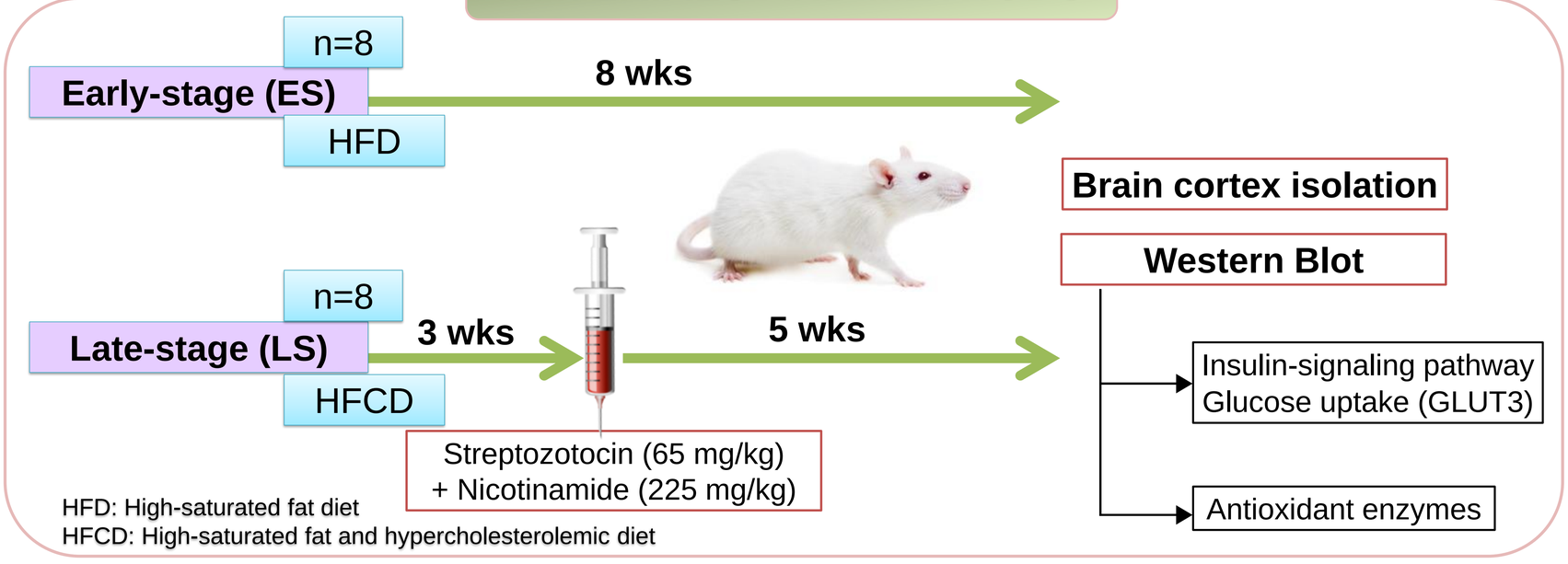
INTRODUCTION

- The impairment in insulin-signaling pathway induces neurological damage [e.g., Alzheimer's disease (AD)]. When AD and type 2 diabetes mellitus (T2DM) coexists, it is known as type 3 diabetes mellitus (T3DM).
- The mitochondrial dysfunction promotes oxidative stress and plays an important role in brain insulin resistance instauration, which finally leads to T3DM.

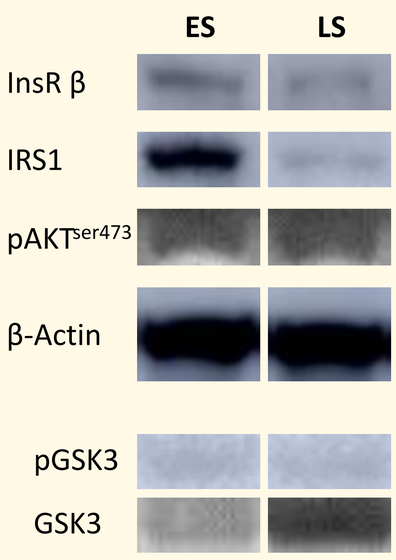
OBJECTIVE

To reveal the suitability of a late-stage T2DM rat model induced by high-saturated fat and hypercholesterolemic diet and streptozotocin-nicotinamide (STZ-NAD) injection as a T3DM model.

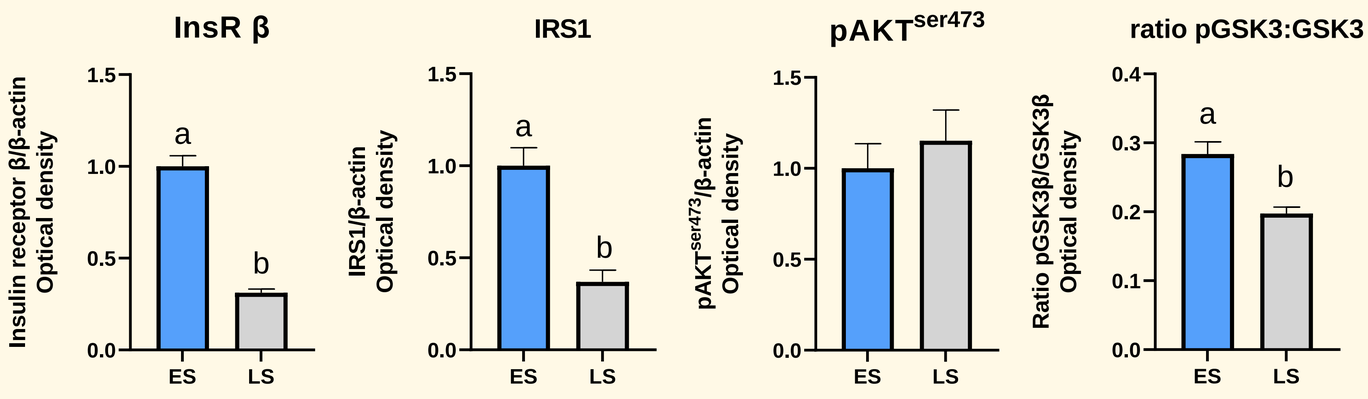
MATERIALS AND METHODS



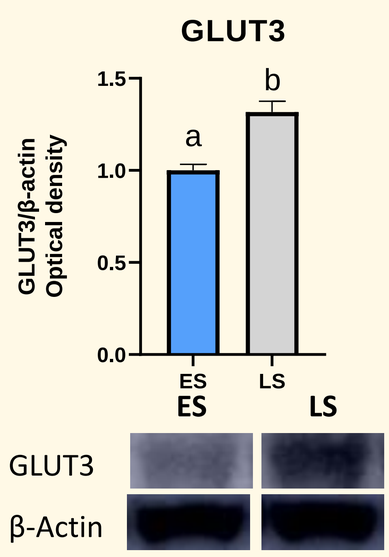
RESULTS



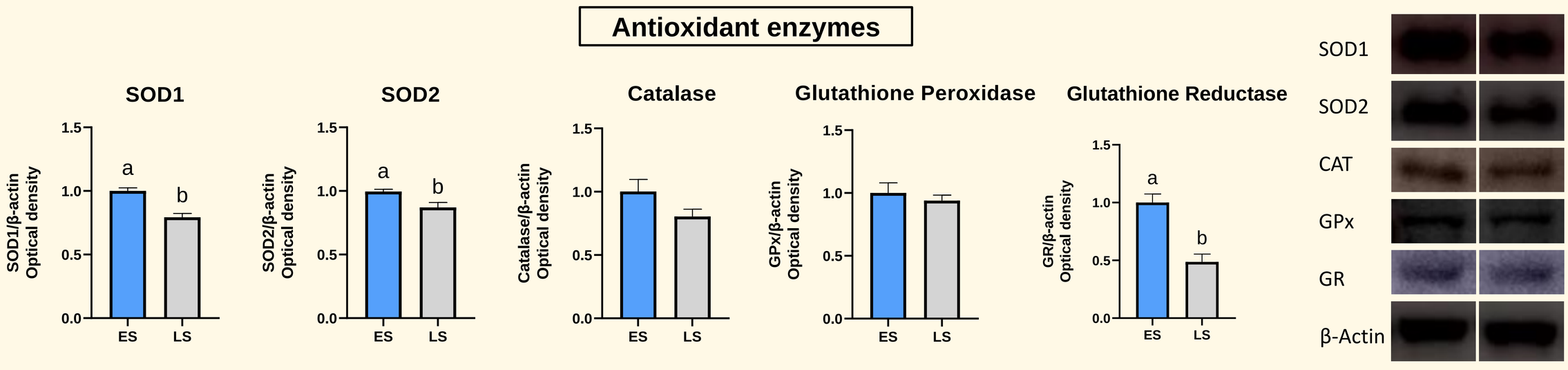
Insuling-signaling pathway



Glucose uptake



Antioxidant enzymes



CONCLUSIONS

- The late-stage T2DM model induced by HFCD and a STZ-NAD injection represents an appropriate experimental tool to study the progression of brain insulin resistance in T3DM.
- This model could be useful to evaluate the efficacy of potential neuroprotective drugs.

ACKNOWLEDGEMENT

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