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Alleviating cerebellum damage in streptozotocin - induced diabetes in mice exploring the effects of *C. viscosa* through gene expression analysis

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INTRODUCTION:

- Diabetes mellitus is a metabolic disorder that leads to hyperglycemia
- Imperatorin is a drug extracted from *Cleome viscosa*
- It is a crystal compound isolated by crystal XRD, FTIR, ESI-MS etc.
- Insulin resistance is widely thought to be a critical feature in type 2 diabetes mellitus (T2DM), and there is significant evidence indicating a higher abundance of insulin receptors in the human cerebellum than cerebrum

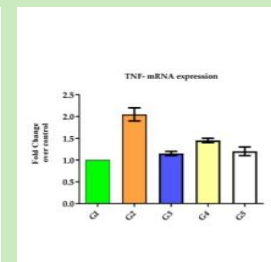
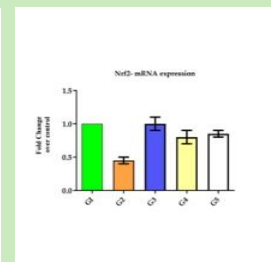
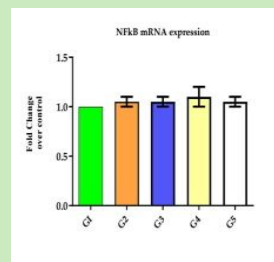
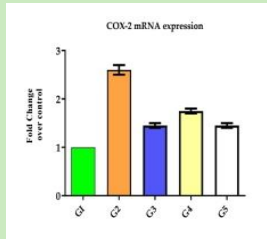
AIMS AND OBJECTIVES

- To characterize the alteration in gene expression in mice cerebellum following exposure of streptozotocin
- To correlate the cerebellum changes in *C. viscosa* (Imperatorin) against diabetic mice model in molecular mechanisms

MATERIALS AND METHODS

GROUP I	(Control N=6) Mice Chow and Water Lithium
GROUP II	Diabetes in mouse control(N=6) Diabetic control(Afolabi, et al.,2019)
GROUP III	Diabetes in mice + Glibenclamide 5mg/kg standard (Bai, 2023)
GROUP IV	Diabetes in mice + Cleome viscosa (Imperatorin) Active at a low dose 200mg/kg. Per Oral (Po) (Suresh, 2020)
GROUP V	Diabetes in mice + Cleome viscosa (Imperatorin) Active Compound at high dose 400mg/kg. Per Oral (Po) (Rao, 2024)

RESULTS:



Effects of Imperatorin on the activity of Serum markers like (A) COX-2 mRNA expression (B) NfκB mRNA expression (C) Nrf2 mRNA expression (D) TNF-α mRNA expression in the cerebellum of mice exposed to Streptozotocin



The data obtained in the study was analyzed by one-way ANOVA. The results were expressed as mean ± SE and P < 0.001 were considered statistically significant.

DISCUSSION AND CONCLUSION:

- Previous study reported that diabetes-related gene expression studies to uncover molecular targets and networks associated with diabetes (Liu et al., 2022).
- This study took advantage of powerful bioinformatic tools to scrutinize and integrate data from publicly available diabetes-associated gene expression data, highlighting molecular targets associated with β-cell dysfunction (Farimm et al., 2024).
- We have found a significant change in the cerebellum's morphology and the expression of memory-related genes in diabetic mice (Sharifi et al., 2023).

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