

## INTRODUCTION:

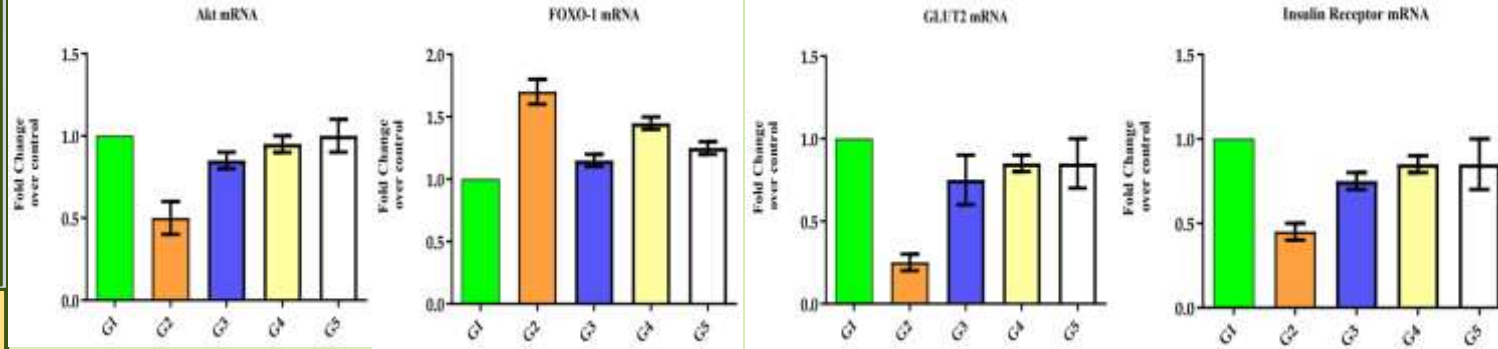
- To characterize the alteration in mice pancreatic tissue following exposure of streptozotocin
- Type 2 Diabetes mellitus Leads to various life threatening microvascular and macrovascular pathologies such as neuropathy, retinopathy, nephropathy, diabetic foot ulcer and atherosclerosis(Yen et al., 2023).
- Globally around 537 million adults are diabetic , this was established by Diabetes Atlas of 2021. Sedentary, obese, lifestyle and unhealthy eating habits contribute to 90 to 95 percent of insulin resistant type 2 diabetes mellitus(Kabubii et al., 2024).
- Imperatorin's anti-inflammatory, anti-diabetic, anti-cancerous, anti-helminthic, anti-bacterial properties are well established in recent studies(Sonar et al., 2021).

## MATERIALS AND METHODS

IAEC NO: SU/CLAR/RD/11/23

Group I	Control (N=6)	Now investigation will be done, fed standard mice chow and water libitum
Group II	Diabetes in Mice control (N=6)	Diabetic control (Afolabi, et al., 2019)
Group III	Diabetes in mice + Glibenclamide 5mg/kg standard (Bai, et al., 2023)	
Group IV	Diabetes in mice + Cleome viscosa + isolated active compounds(imperatorin) at a low dose 200 mg/kg. Per oral (Po) (Suresh, 2020).	
Group V	Diabetic in mice + Cleome viscosa + isolated active compounds at high dose 400 mg/kg. Per oral (Po) (Rao, et al., 2014).	

## RESULTS:



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

Effects of Imperatorin on the activity of serum markers like Akt mrna (A), FOXO-1mrna (B), GLUT2 mrna (C), and Insulin receptor mrna (D) in the pancreas of mice exposed streptozotocin.

**DISCUSSION AND CONCLUSION:** Treatment with imperatorin significantly enhanced the expression of Akt mRNA, GLUT2 mRNA, and Insulin receptor mRNA in the pancreas, while reducing the expression of FOXO-1 mRNA. These molecular changes, proves that imperatorin holds potential as a therapeutic agent for managing diabetes by restoring pancreatic function and improving insulin signaling at molecular level.

## BIBLIOGRAPHY:

- Yen FS, Wei JC, Shih YH, Hsu CC, Hwu CM. Impact of individual microvascular disease on the risks of macrovascular complications in type 2 diabetes: a nationwide population-based cohort study. *Cardiovascular Diabetology*. 2023 May 9;22(1):109.2.
- Kabubii ZN, Mbaria JM, Mathiu PM, Wanjohi JM, Nyaboga EN. Diet Supplementation with Rosemary (*Rosmarinus officinalis* L.) Leaf Powder Exhibits an Antidiabetic Property in Streptozotocin-Induced Diabetic Male Wistar Rats. *Diabetology*. 2024 Jan 4;5(1):12-25.
- Wang LY, Cheng KC, Li Y, Niu CS, Cheng JT, Niu HS. The dietary furocoumarin imperatorin increases plasma GLP-1 levels in type 1-like diabetic rats. *Nutrients*. 2017 Oct 30;9(11):1192.
- Sonar MP, Nikam DK, Rathod VK. Intensification of imperatorin extraction from *Aegle marmelos* by ultrasound assisted three phase partitioning: Comparative studies and exploring its ethnomedicinal uses. *Chemical Engineering and Processing-Process Intensification*. 2021 Dec 1;169:108588.
- Al Nahdi AM, John A, Raza H. Elucidation of molecular mechanisms of streptozotocin-induced oxidative stress, apoptosis, and mitochondrial dysfunction in Rin-5F pancreatic  $\beta$ -cells. *Oxidative Medicine and Cellular Longevity*. 2017 Aug 6;2017.

