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Name of Scholar: Nida Andlib

Name of the Supervisor: Prof. Sonu Chand Thakur

Name of Department/Centre: Centre for Interdisciplinary Research in Basic Sciences

Topic of Research: Therapeutic effect of medicinal plants on the reproductive function of streptozotocin induced diabetic rats.

Findings

Diabetes mellitus is a significant chronic condition and one of the most widespread diseases globally. Reproductive dysfunction brought on by diabetes is a serious but frequently overlooked side effect. Both male and female fertility and reproductive health are adversely affected by this illness, which has serious medical, psychological, and social repercussions. Current diabetes treatments mostly focus on glycaemic control and ignore reproductive consequences, resulting in a crucial gap in patient care despite these pervasive problems. In this study, 2 medicinal plants are used to study the effect on the reproductive dysfunction in both male and female diabetic rats. In this study, certain critical insights and findings emerged, which are being briefed below:

1. Different fractions of *Bryonia laciniosa* and *Symplocos racemosa* have been studied against streptozotocin-induced diabetes in male and female rats. The activity of TNF- α , COX-2 and IL-6 and the biomarkers of oxidative stress were inhibited in a dose-dependent manner after the treatment. The histopathological study showed a restoration of cellular morphology.
2. Molecular docking studies indicated that phytochemicals derived from both plants exhibit significant binding affinity to key proteins implicated in reproductive dysfunction, reinforcing the *in vivo* experimental results and their potential in preventing diabetes-associated reproductive impairment.
3. Data mining and bioinformatics analyses identified six hub genes, NCOA2, FOXO1, THRA, MED17, XIAP, and COL1A1, as differentially expressed in the context of female infertility associated with diabetes mellitus, highlighting their central role in

the underlying molecular mechanisms and their promise as targets for further research.

These findings suggest that *Bryonia laciniosa* and *Symplocos racemosa* hold therapeutic potential for treating diabetes-related reproductive dysfunction, while the identified hub genes offer avenues for future mechanistic and interventional studies.