

## **Title: Therapeutic Potential and Molecular Mechanisms of Epigallocatechin-3-gallate (EGCG) in Murine Model of Male Infertility**

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Guide: Dr. Dipty Singh

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Venue: Dr. Shanta Rao Auditorium

Date and Time: 19<sup>th</sup> June 2026, 11.00 am

### **Abstract**

Male infertility is a global population health concern, with approximately 50% of cases attributable to impaired sperm count, motility, or morphology. Among the agents used to model this condition experimentally, busulfan, an alkylating agent, has gained wide acceptance for inducing oligoasthenozoospermia, as it is known to disrupt spermatogenesis through germ cell apoptosis and induction of testicular oxidative stress. Epigallocatechin-3-gallate (EGCG), the major polyphenol in green tea, possesses antioxidant, anti-inflammatory, anticancer, and epigenetic regulatory properties and has shown protective effects against testicular toxicity in experimental studies. However, its therapeutic potential in restoring fertility remains poorly understood. Furthermore, despite growing interest in EGCG-based drug delivery systems to overcome its poor bioavailability, their efficacy in improving male reproductive outcomes has not been systematically evaluated.

The present study investigates the efficacy of EGCG in improving sperm parameters and fertility in a busulfan-induced male infertility model and explores the molecular mechanisms underlying EGCG-mediated regulation of spermatogenesis. In addition, the study will compare the effectiveness of conventional EGCG administration with EGCG delivered through a drug delivery system. Adult male Wistar rats were administered busulfan to induce infertility, followed by EGCG supplementation for 30 days. Sperm parameters, testicular histopathology, hormonal profile, and fertility outcomes were evaluated. Detailed methodology and findings will be presented during the seminar.