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**MEDICAL RESEARCH FOUNDATION'S**  
**ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,**

Komarapalayam, Namakkal-638 183, Tamilnadu

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 One Day National Seminar on

**"THE IMPACT OF AI ON DRUG DESIGN AND  
 OPTIMIZATION OF EMERGING ANALYTICAL  
 TECHNOLOGIES IN PHARMACY"**

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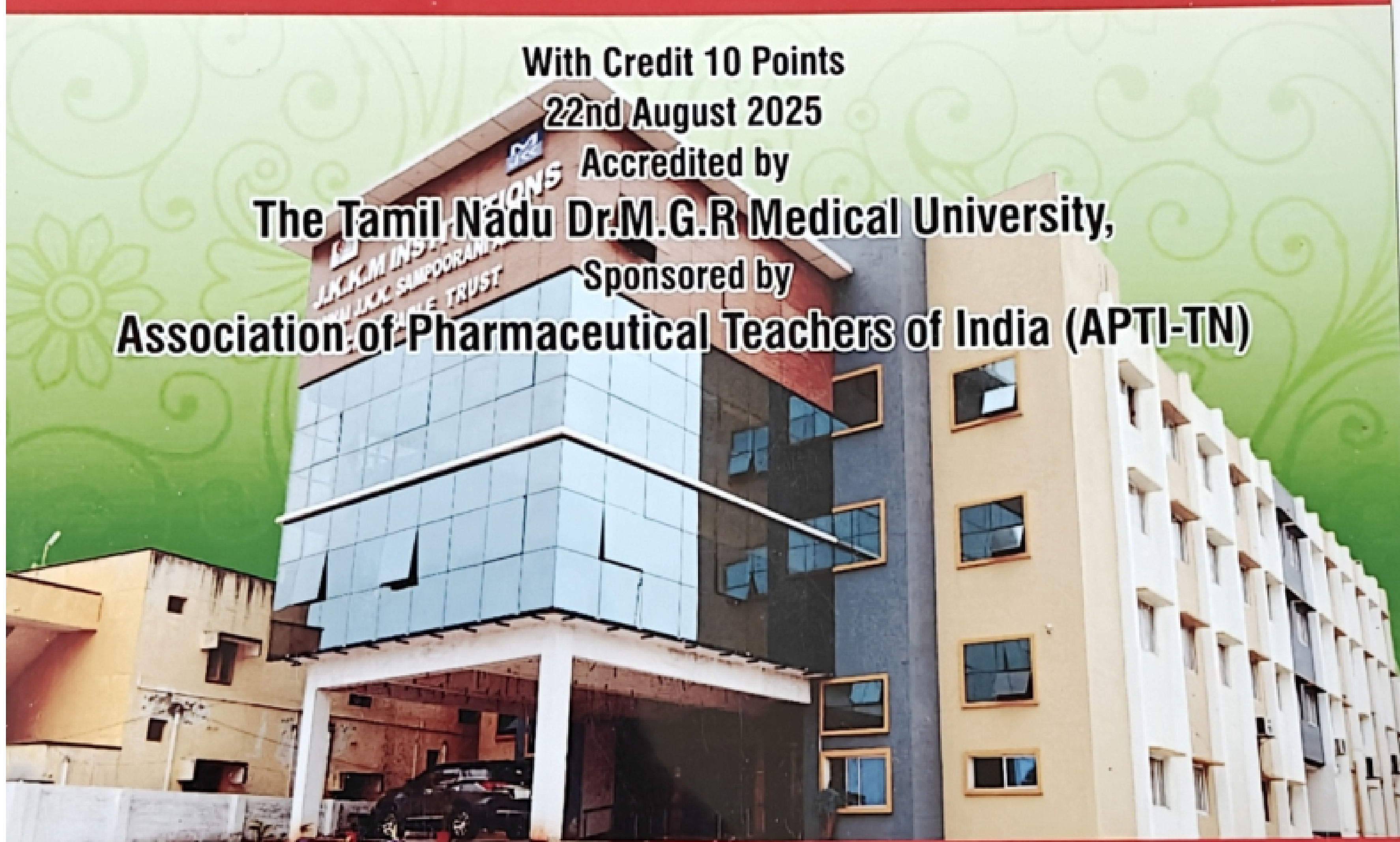
22nd August 2025

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Date : 22.08.2025



ISBN NUMBER

978-81-992034-7-1

**Phytochemicals in Action: Targeting Cancer and Viruses with “*Solanum xanthocarpum*”,**

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**ABSTRACT: JKKM- EP 040**

*Solanum xanthocarpum* (commonly known as Kantakari or Yellow-berried Nightshade) is a traditional medicinal plant belonging to the Solanaceae family, widely recognized for its rich phytochemical profile and diverse pharmacological activities. Its bioactive constituents, including alkaloids (solanine, solamargine, solasodine), flavonoids, saponins, tannins, and phenolic compounds, have been extensively studied for therapeutic potential. Among these, glycoalkaloids such as solamargine and solanine exhibit potent anticancer activity by inducing apoptosis, inhibiting tumour cell proliferation, and arresting the cell cycle at specific phases. Similarly, flavonoids and phenolics contribute to antioxidative and immunomodulatory effects, which enhance cancer prevention strategies. In addition to anticancer properties, phytochemicals of *S. xanthocarpum* demonstrate antiviral activity by interfering with viral replication, blocking entry pathways, and modulating host immune responses, making them promising candidates for antiviral drug development. Analytical techniques such as GC-MS, LC-MS, and NMR spectroscopy have been utilized to identify and characterize these phytoconstituents, thereby aiding in standardization and quality assurance. This poster highlights the dual role of *S. xanthocarpum* phytochemicals in combating cancer and viral infections, while emphasizing the importance of modern analytical approaches in validating traditional knowledge. Harnessing these bioactive molecules may pave the way for novel plant-based therapeutics in modern medicine. Future research on *Solanum xanthocarpum* phytochemicals may focus on exploring their potential anti-HIV activity. Advanced molecular docking, in vitro assays, and clinical evaluations will help to validate their efficacy against HIV. If proven, effective, low-cost, and safer therapeutic agents for HIV management are developed in the future.

**KEYWORDS:** Botanical profile, phytoconstituent profile, anti-cancer activity, anti-viral activity (HIV), Analytical Tools, Modern Significance, Future Perspectives on Anti-HIV research