

Joint event on  
8<sup>th</sup> International Conference on  
**NEUROLOGICAL DISORDERS,  
CENTRAL NERVOUS SYSTEM AND STROKE**  
&  
International Conference on  
**NEUROLOGY AND NEUROSURGERY**

December 04-05, Dubai, UAE

## Advance and novel research technique used for the targeted release of anti tumor drug to treat Glioblastoma tumors

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**Statement of the Problem:** Glioblastoma is the most frequently occurring and devastating primary brain tumor. Treatments involved surgery followed by radiotherapy with concomitant and adjuvant chemotherapy however faces a primary hurdle in delivery of drug to BBB (blood brain barrier) and has found insufficient penetration of drug to attain a therapeutic effect. New strategies are highly required with improvised and innovative technology such as a degradable delivery device that provides targeted multiple adjuvant chemotherapeutic agents to the target site for the treatment of tumor. Adopting a nanotechnology technique such as Electrospinning technique helps in manufacturing of nanofibres and thus nanofiber based Drug Delivery System (DDS) was designed for oral delivery of anti-tumor drug in the cerebral cavity for an effective treatment of Glioblastoma tumors.

**Methodology & Theoretical Orientation:** The study involves fabrication of polymeric drug loaded nanofibres using Electrospinning process. The prepared nanofibres formulation were validated by various characterization methods using FTIR and surface morphology by AFM, SEM, TEM analysis, drug release, in-vitro are studied, cytotoxicity of nanofibers was evaluated by MTT assay in U87 MG Brain tumor cell line. In vivo antitumor efficacy of nanofibers was evaluated in Albino Wistar Rats bearing tumors.

**Findings:** The formulations of nanofibers were well-characterized and in vitro release and kinetic studies

suggest sustained release. The antitumor potential of the polymeric drug loaded nanofibers were evaluated against U87 MG Brain tumor cell line. In vivo antitumor efficacy of nanofibers shows primary tumor resection decreased in treated with oral administered nanofibers, compared with the blank nanofibres, systemic or locally administered drug and the control group.

**Conclusion & Significance:** The experimental result shows that the biodegradable nanofibres are having high drug loading efficiency and drug releasing efficiency after oral formulation in rats showing excellent biocompatibility, and results obtained reveals adopting drug eluting nanofibres may result in sustain delivery of anti-tumor drug in the cerebral cavity in order to attain enhanced therapeutic effect.

### Biography

Iram Khan has completed her M.Pharm in Quality Assurance and was declared Gold Medalist for her B.Pharm from Uttar Pradesh Technical University. She is currently pursuing her PhD from Jamia Hamdard, New Delhi in Pharmaceutics Specialization in Quality Assurance under supervision of Prof. (Dr.) Yasmin Sultana. She has published book chapters and papers in journals and has presented many papers and attended various seminars and conferences.

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