

Novel drug delivery platform for the topical treatment of cancer

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Anti-cancer drugs are often harsh and invasive to normal tissues and do not selectively target malignant cells. For cervical cancer, this is apparent where chemotherapy is the standard treatment (following radiation) and results in serious cytotoxicity and low 5-year survival rates. *Human papillomavirus* (HPV) is responsible for more than 99% of cervical cancer cases. We have recently identified a selective approach to kill only HPV-driven malignancies by inhibiting the Aurora A kinase using Alisertib (MLN8237). Furthermore, phase 2/3 clinical trials for oral Alisertib are being undertaken on many cancers with encouraging results. However, serious side effects related to systemic Alisertib's delivery like neutropenia, leukopenia and anemia were noticed. As cervical cancer is localized to the cervical face in the early stages, localized delivery is feasible. Although extensive research has been carried out on Alisertib, to our knowledge, no single study exists that has evaluated its efficacy on cervical cancer, either systemically or as a local treatment. Thus, this research focuses on designing a novel approach for topical anti-cancer delivery platform (intra-vaginal rings) for cervical cancer treatment. Matrix-type silicone intra-vaginal rings are designed, manufactured and optimized to maintain a constant release of Alisertib for three weeks. This novel approach will aid in reducing the required drug dose, avoiding the first pass metabolism and reducing the systemic side effects of the drug. Moreover, due to the direct contact between the delivery system and the surface of the malignancy, we presume that it will result in a significant improvement in therapy outcomes.

Biography

Yaman Tayyar has completed his Bachelor in Pharmacy from Isra University and currently undertaking his Postgraduate studies in Griffith University, Australia with Professor Nigel McMillan. He is interested in drug delivery and to improve therapy outcome and reduce associated side effects of anti-cancer treatments.

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