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Novel pyrimidine derivatives as potential therapeutic agents for cervical cancer

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Statement of the Problem: Cervical cancer is a public health problem in developing countries. Human Papillomavirus (HPV) subtypes 16 and 18 are causative agents for most of the cases. There is an urgent need to develop novel therapeutic strategies with minimal side effects for the treatment of advanced refractory cervical cancers. **Methodology & Theoretical Orientation:** In vitro anticancer activity of six hit derivatives from a novel series of 2-phenyl-substituted 4-amino-6, 7-dihydro-5H-cyclopenta[d]pyrimidines was tested against human HPV-positive cervical cancer cell lines viz. HeLa and SiHa. Cytotoxicity was evaluated by standard MTT assay. Further, the effect the most potent hits on clonogenic potential and cell cycle was tested using colony forming assay and flow cytometric analysis, respectively. Apoptosis-inducing potential was confirmed using protein expression analysis for caspase-3. Effect on cell migration was tested using wound healing assay. **Findings:** Specific derivatives showed good to moderate cytotoxicity against HeLa and SiHa cell lines and lead

to apoptosis and G2/M arrest in these cell lines respectively. Furthermore, identified hits inhibited cell migration in HeLa cells. **Conclusion & Significance:** We demonstrate promising anticancer activity of novel pyrimidine derivatives as potential anticancer agents for cervical cancer. Future studies are warranted for achieving better efficacy using structure activity relationship (SAR) studies and elucidating mechanism of action of these hits in cervical cancer cells.

Biography

Sonal studied Life Sciences at the University of Mumbai and graduated as MSc in 2006. She then joined R & D of Primal Life Sciences Ltd., Mumbai, India (a reputed pharmaceutical company) in the Department of Pharmacology as a research scientist. While working, she simultaneously completed her PhD degree in 2015 at the same institution. After three-year postdoctoral fellowship at IIT Bombay, Mumbai, India, she obtained the position of Assistant Professor at NMIMS (Deemed-to-be) University. She has published more than 30 research and review articles in reputed peer-reviewed journals.