

Stable-projectile solid lipid nanoparticles (SLNs) of dacarbazine for effective melanoma treatment

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Delivering chemotherapeutic agents into tumor cells with reduced side effects and comprehensive absorption is a challenge for skin melanoma. The aim of this research was to create and examine stable-projectile solid lipid nanoparticles that could be filled with chemotherapeutic Dacarbazine (DCB). Significant ratios of Kolliphor® P188 & phosphatidylcholine used to create projectile solid lipid nanoparticles (SLNs) which eventually reversed micelles inside SLNs. DCB gold nanoparticles were used as shell to learn more about the real drug localization process. To know the optimized anti-cancer formulation impact (DCB-SLNs-8), it was mixed into optimized Gellan gum (0.01% w/v) and applied for six weeks twice daily on Ehrlich Ascetic Carcinoma balb/C mice. Dynamic light scattering (DLS) & TEM confirmed that the optimized DCB-SLNs-8 has a uniform particle size <200nm with reversed micellar formation near its shell area. Particle size, zeta potential, PDI, trap efficacy (%), cumulative drug permeation varied from 146 ± 4.71 nm to 715 ± 7.36 nm, -12.45 ± 2.78 mV to -30.78 ± 2.83 mV, 0.17 ± 0.013 to 0.51 ± 0.023 , $37.78 \pm 2.78\%$ to $87.45 \pm 4.78\%$, $117 \pm 4.77\%$ to $275 \pm 5.67\%$ respectively. Histopathology indicated that DCB-SLNs-8 mice treated showed less keratosis, inflammatory reactions and angiogenesis than free DCB mice treated. Thus, stable-projectile solid lipid nanoparticles (SLNs) could be the most promising approach to curing melanoma.

Biography

Sankha Bhattacharya did his Post Doctorate from the Indian Institute of Technology (BHU), Varanasi, INDIA (August 2018-August 2019) in cancer nanomedicine and molecular pharmaceutics. He did his Ph.D. from the School of Pharmacy, RK University, Rajkot, India (June 2014-April 2018). He is currently serving as an Associate Professor in the Department of Pharmaceutics, School of Pharmacy & Technology Management, SVKM'S NMIMS Deemed-to-be University, Shirpur, Maharashtra, India.