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Abstract

Formulation Development of Silver Nanoparticulate Drug Delivery System for the Treatment of Colorectal Cancer

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Abstract:

The current standard approach of western medicine for treatment of colorectal cancer consists of an attempt to eradicate established tumors with combined treatment with surgery, chemotherapy and radiation. However, this therapy has failed in many respects. In most of the chemotherapies as these do not kill only cancer cells but also normal cells .Novel colon targeted herbal silver nanoparticles loaded microspheres were synthesized successfully from both the species of Ocimum namely Ocimum sanctum (OS) and Ocimum basilicum(OB). Aqueous leaf extracts of OS and OB were prepared and which were used as capping as well as stabilizing agent for the synthesis of silver nanoparticles and then they were loaded in alginate microspheres to target the colon. Further they were enteric coated with Eudragit S100 to target the drug release for colorectal cancer. Optimized formulations were subjected to in vitro and in vivo screening and their anticancer potential against HCT colon cancer were assessed. The prepared nanoparticles were evaluated for various characteristic parameters such as UV–Visible spectral analysis, particle shape by TEM analysis, particle size distribution and zeta potential by zetasizer. We developed nine formulations from each species by loading green synthesized silver nanoparticle in alginate microspheres and they were evaluated for particle size analysis, surface morphology by SEM, loading entrapment efficiency, swelling index and mucoadhesive strength. These studies revealed that they were nano-sized, spherical and the formulations were found to be stable at all the temperature under the stability study. All the formulations were subjected to drug release dissolution study, the formulation SNFA3 and SNFB3 were selected for further in vitro cell line study and in vivo anti-cancer study. MTT assay revealed that both the formulations showed significant anti- proliferation in HCT116 cell line.

Biography:

Dr.Deepa M K is an Associate Professor of Pharmaceutics at Ashokrao Mane College of Pharmacy, Kolhapur,Maharashtra. She obtained her B.Pharmacy from The Tamil Nadu Dr.MGR Medical University, Chennai, Tamil Nadu and M. Pharmacy from SRM deemed University, Chennai. Tamilnadu. Ph.D in Pharmaceutics from Singhania University, Rajasthan. She has 13 years of teaching and research experience. She has guided B.Pharm and M.Pharm students. Her area of interest is nano particulate drug delivery for colorectal cancer, development silver nanoparticle, floating drug delivery system, microencapsulated drug delivery system and Solid lipid nano particulate drug delivery system. She has published 34 research and review articles in national and international journals. She has presented papers in various national conferences.

Publication of speakers:

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3. Karthikeyan M, Deepa MK, Anushmaya RP, Fayis K, Rasha PK ,Satish C. Phytochemical analysis and evaluation of in vitro anti-Inflammatory activity of Lantana camara L. Journal of Pharmaceutical Advanced Research.2020; 4 (3), 833-836.

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