World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:11, No:01, 2017

Chitosan Doped Curcumin Gold Clusters Flexible Nanofiber for Wound Dressing and Anticancer Activities

Authors : Saravanan Govindaraju, Kyusik Yun

Abstract : The purpose of this study is to develop the chitosan doped curcumin gold cluster nanofiber for wound healing and skin cancer drug delivery applications. Chitosan is a typical marine polysaccharide composed of glucosamine and n-acetyl glucosamine biodegradable and biocompatible polymer. Curcumin is a natural bioactive molecule obtained from Curcuma longo, it mostly occurs in some Asian countries like India and China. It has naturally antioxidant, antimicrobial, wound healing and anticancer property. Due to this advantage, we prepared a combination of natural polymer chitosan with Curcumin and gold nanocluster nanofiber (CH-CUR-AuNCs nanofibers). The prepared nanofiber was characterized by using Fourier transform infrared spectroscopy (FT-IR), and scanning electron microscopy (SEM). Antibacterial studies were performed with E.coli and S.aureus. Antioxidant assay, drug release test, and cytotoxicity will be evaluated. Prepared nanofiber emits low intensity of red fluorescent. The FTIR confirm the presence of chitosan and Curcumin in the nanofiber. In vitro study clearly shows the antibacterial activity against the gram negative and gram positive bacteria. Particularly, synthesised nanofibers provide better antibacterial activity against gram negative than gram positive. Cytotoxicity study also provides better killing rate in cancer cell, biocompatible with normal cell. Prepared CH-CUR-AuNCs nanofibers provide the better killing rate to bacterial strains and cancer cells. Finally, prepared nanofiber can be possible to use for wound healing dressing, patch for skin cancer and other biomedical applications.

Keywords : curcumin, chitosan, gold clusters, nanofibers
Conference Title : ICABB 2017 : International Conference on Applied Bioscience and Biotechnology
Conference Location : Singapore, Singapore
Conference Dates : January 08-09, 2017