

Tea polyphenols-loaded PLGA nanoparticles: Synthesis, characterization and protective effect against induced DNA damage in vivo

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Nanoparticles have emerged as one of the most promising drug delivery systems in the field of chemotherapy for localized and metastasized cancers owing to their unique potentials like high intracellular uptake, enhanced permeability and retention while reducing undesirable side effects. A number of naturally occurring polyphenols, present in most commonly consumed beverage tea, has been shown to possess anticancer properties but has associated with limited success including inefficient systemic delivery and bioavailability under in vivo conditions. Our present work investigated the efficiency of polyphenolic constituents of black (Theaflavin-TF) and green (epigallocatechins-3-gallate-EGCG) tea encapsulated in poly (lactic-co-glycolic acid) nanoparticles (NPs) using double emulsion method. The nanoparticles formulated were and then characterized for encapsulation efficiency, surface morphology, particle size and in vitro release. TEM analysis showed the formation of spherical and monodisperse nanoparticles, with an encapsulation efficiency of ~18% and 26% for TF and EGCG, respectively. Further their preventive potential against 7, 12-dimethylbenzanthracene (DMBA) induced DNA damage in mouse skin using DNA alkaline unwinding assay (DAUA) was evaluated. Pre-treatment (topically) of mouse skin with TF or EGCG (100µg/mouse) doses exhibits protection of 45.34% and 28.32%, respectively, against DMBA induced DNA damage. Additionally, TF/EGCG loaded NPs have showed significant potential for induction of DNA repair genes (XRCC1, XRCC1 and ERCC3) and suppression of DNA damage responsive genes (p53, p21, MDM2, GADD45a and COX-2) as compared to respective bulk doses. Hence, our studies achieved successful formulation of EGCG and TF loaded PLGA nanoparticles and has high potential to control DMBA induced DNA damage at much more reduced concentrations and thus opens a new arena for clinical application in prostate cancer therapy.

Biography

Priyanka Bhatnagar has completed her M.Sc. in Chemistry (Organic) from University of Delhi, India in 2009. She is pursuing her Ph.D in Bio-organic Chemistry from Institute of Genomics & Integrative Biology (IGIB), CSIR Lab, New Delhi, India. She is working in the area of design and development of Polymeric systems for Effective Drug Delivery. She has 1 paper in reputed journal.

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Study on shelf life of liquid smoked catla (Catla catla)

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India is one among the top ten fish producing countries in the world. Man is dependent on products of plant and animal origin for food. Fish is one of the most nutritious foods. Catla (Catla catla) is an Indian major carp. It is liked for its unique taste and tender flesh. An increasing amount of evidences suggest that, fish meat and oil contains high amount of polyunsaturated fatty acid that are valuable in decreasing the serum cholesterol to prevent a number of coronary heart diseases. In the current study, the freshwater Catla catla is used, because, it is a major carp in terms of production among the freshwater fish species in India and withstands a wide range of experimental conditions. Liquid smoking can be done by dipping the product or by spray injection into the smoking oven. The color produced by liquid smoke is intensified when the surface is heated and dried. Liquid smoking emerges as a potential substitution for traditional smoking method in preserving proteinaceous foods. Packaging plays an important role in today's society: it surrounds, enhances and protects the goods we buy right from processing through handling and storage to the final consumer. Food is packaged to preserve its quality and freshness, and also add appeal to consumers and to facilitate storage and distribution. Vacuum packaging increases the shelf life of the fish than normal packaging. Vacuum packaging prevents moisture evaporation and also provides an attractive temper resistant package.

Biography

S. Reginold Jebitta is perusing her Doctoral Degree in the Department of Food Processing And Engineering from Karunya University and worked as an assistant professor in Kongu Engineering College, Erode. Currently she is working under the guidance of Dr. M. Ramanathan in the same university.

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