J Cancer Sci Ther 2014, 6:10
http://dx.doi.org/10.4172/1948-5956.S1.035

OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Cancer Science & Therapy
October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore Conference Center, USA

Development of a novel nano-biomaterial by dispersion of zero valent iron nanoparticles

Selcan Karakuş, Tuba Şişmanoglu, Ayşen Kolan and **Ayben Kilislioglu**
Istanbul University, Turkey

The importance of studies on developing new materials with improved properties; such as anti bacterial activity, biocompatibility and anticancer properties are increasing gradually every day. Stronger mechanical properties can be obtained by adding a small amount of inorganic nanofiller into the organic matrix. Homogeneous nanodispersion of inorganic phase in nanodimension into the organic matrix is very important in developing new biomaterials with advanced features. In this study a natural biodegradable and nontoxic biopolymer and natural inorganic nano filler are used to develop a new nanobiomaterial with antibacterial activity. In order to obtain unique properties and impact we should understand and control the structure at the molecular level. One of the most important factors here is to achieve the nano dispersion of zero valent metal in the biopolymer matrix. The objective of this study is preparation of zero valent iron nanoparticles by chemical methods and then mixing sub-components in nanoscale to create unique antibacterial property. When exposed to oxygen and water, iron oxidizes in the acidic environment. The key point here is to disperse adequate amount of iron which is small enough in the biopolymer matrix. This will make hyperoxides to create hydroxy radicals. Superoxide-dependent formation of hydroxyl radicals are expected to damage DNA, proteins, lipids, and other cellular components. In our study the size of iron nanoparticles is small enough to penetrate into the bacteria. By manipulating dispersion conditions and iron concentration one could control the size of nano iron particles to develop the biomaterial as an anti cancer agent.

Biography

Ayben Kilislioglu received her Master of Science degree in physical chemistry from IU in 1994. She received her doctor of philosophy degree in physical chemistry from IU in 2000. She worked as visiting research Assistant Professor at the University of Illinois, Chicago, department of chemistry, between 2005-2006. She also worked at University of Chicago in Dr. Graeme Bell's Lab in 2007. She has research experience in adsorption, surface characterization and ion exchange. She worked on different projects funded by Istanbul University Grant Commission. She has published several research articles and a book chapter in this area. She is currently working in the department of chemistry, Istanbul University in Turkey.

Apelin signaling: A promising pharmacological target for cancer therapy?

Bernard Masri
Cancer Research Center of Toulouse, France

Apelin is a novel angiogenic factor with comparable angiogenic potential as VEGF. This peptide can both promote angiogenesis and lymphangiogenesis. Upregulation of apelin gene occurs in one-third of the human tumors and its up-regulated expression was found to be associated with clinical outcome in certain human cancers. This lecture will address the characterization of apelin signaling in colon and pancreatic cancer and the potential role of this signaling pathway as a therapeutic target. We observed the expression of apelin and its receptor in human colon and pancreatic adenocarcinoma but also in mouse models of pancreatic ducal adenocarcinoma. At the cellular level, apelin regulates activation of key intracellular signaling pathways such as PI3K/Akt and MAPKs thereby promoting proliferation and migration of tumor cells. Accordingly, apelin signaling could represent a promising pharmacological target for the treatment of these diseases.

Biography

Bernard Masri is a researcher at the Cancer Research Center of Toulouse, France. He earned his PhD in Molecular and Cellular Pharmacology in 2004 from the University Paul Sabatier at Toulouse, France. He completed his postdoctoral training at Duke University Medical Center (NC, USA) where he obtained a Marie Curie Outgoing International Fellowship. He has studied Apelin signaling for 15 years during which time he has authored more than 25 peer-reviewed reports. Currently, his recent research focuses on understanding the function of apelin signaling in colon and pancreatic cancer.