

Nanoworld in Medicine and Pharmacy: The Latest Developments

Seminar on Nanomedicine that will be held on November 26, 2022 - Nanomedicine Centre

University of Sumatera Utara, Medan, Indonesia

Prof.Dr. İsmail Tuncer Değim

Biruni University, Faculty of Pharmacy, 34010, Topkapı, İstanbul

There are many nano-system have been proposed to overcome many problems we faced in the field of pharmacy and nanomedicine and many new treatments or some alternative methods are becoming available with the help of these systems. Therefore, nanotechnology has been increasingly gaining importance in pharmaceutical and medical fields in addition to its valuable contributions to other scientific fields. It is very interesting that when any nanomaterial is formulated with drug molecules, the drug represents more permeability or higher penetration ability through the membranes than its ordinary form. These gained properties have been always attributed to the nanoparticles or nano delivery systems but recent findings and some new interpretations showed that the alteration of water properties with these kinds of nanomaterials containing drug formulations have also a big impact on the dissolution and permeability. There are many nano-sytem available in the field of Pharmaceutical Nanotechnology. A quick look and a glimps to these nan-systems will be done in this presentation. One of the smartest nanosized drug delivery systems is the carbon nanotubes (CNTs), which is an electroconductive and adsorptive material. Their high specific surface areas have been reported to be useful for efficient drug loading and drug delivery. Although they have been proposed to be used for other routes, they appeared to be better for especially transdermal applications because of being not totally findings were always considered to be related with the material especially when CNTs were used for drug delivery. It is very interesting that the superior permeability or penetration ability was also observed with other nanostructures such as boron nitride nanotubes (BNNT), quantum dots (QD) or even lipid nanotubes (LNT). So some examples from our recent work will presented by compiling all available data.

This presentation will highlight the properties of water molecules in the formulation can actually be altered by nanoparticles and some of the gained properties with nanoparticulate systems maybe the results of the changes water properties in the present solution. Some of the latest and iterestig findings will be discussed when QDs are used.