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Editorial

Current Approaches in Nanomedicine

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Introduction

Over the last years, nanotechnology has been introduced in our daily life. Nanotechnology may be able to part in a very range of applications, such as in nanomedicine, nanoelectronics, biomaterials energy production, and consumer product, etc. The application of nanotechnology for medical purposes has been termed nanomedicine and is defined as nanoscale tools (e.g., 1–1000 nm sized) for the diagnosis, prevention, and treatment of diseases. The term nanomedicine appeared in the 1990s, and since then, has the potential to significantly improve some current treatments. Commonly, nanomedicines consist of active pharmaceutical ingredients such as small molecules or biologics packaged into nano-sized carriers made of excipients like lipids and polymers. By packaging drug in the particles, drug concentration in the target is maximize by passive or active targeting and pharmacokinetic-pharmacodynamics profiles are improved. But due to their size related physicochemical properties, nanomaterials can require additional quality and safety testing compared to products with standard size.

In nanomedicine, nanomedical devices can be used for analytical, imaging, detection, diagnostic and therapeutic purposes and procedures, such as targeted cancer therapy, drug and gene delivery, improving cell-material interactions, scaffolds for tissue engineering, etc. The application areas of nanomedicine are shown in Figure 1.

With the developing technology and increasing life expectancy, new problems are faced in human life. Science is actively working to offer solutions to these problems. The advancing technology and increasing knowledge, the reliability of the products and techniques used for years, started to be questioned and the problems identified led to the development of new solutions. Over than 160 years, dentistry has been used silver amalgam for tooth filling material which contains approximately 50% Hg metal. During the past decay, science demonstrated the released Hg from the filling material covalently bound to cell proteins and shows toxic effect. So, the presence of toxic and trace elements in dental powders has led to the discover better dental filling materials and tests. In this context, Joseph published a research article about Al detection in dental powder by using handheld X-Ray Fluorescence (HHXRF) (Joseph, 2019). On the contrary of conventional XRF, HHXRF has an advantage of showing Al which is a prominent element in dental powders.

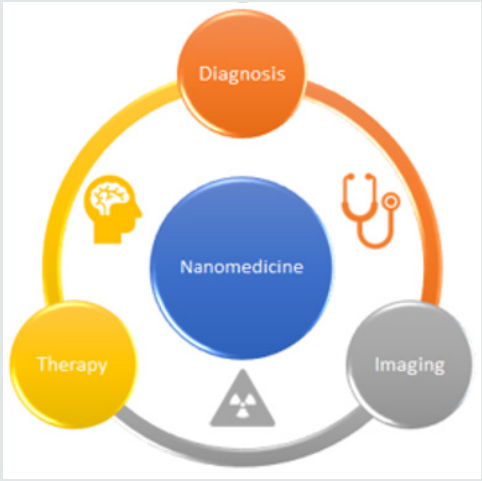

Figure 1: Schematic representation of the application areas in nanomedicine.

Mycobacterium tuberculosis infection is one of the most common and deadliest infection for many years. During past decades, many efforts have been made to reduce the level of the diseases. Gupta et al. reviewed the mycobacteriophage to control tuberculosis infection (Gupta et al., 2019). Mycobacteriophages are the member of a group of bacteriophages that infects Mycobacterium and have two killing mechanisms such as lytic and lysogenic. Endolysin and lysB proteins have a major role to disrupt cell wall envelope of the bacterium. Mycobacteriophage therapy is a novel study for

Tuberculosis which is a common and deadliest infection disease. Both in nuclear and thermonuclear power engineering, hydrogen could be the first reason of equipment damage. Because of that, reactor pressure vessels (RPV) was manufactured without stainless cladding as a product of RPV wall corrosion. In the RPV steel, hydrogen concentration was determined with gas chromatography. The hydrogen content in the irradiated steel were found less than 0,1 ppm. This was attributed to the increase in hydrogen content as fast neutron fluency increased (Krasikov, 2019).

"If one day, my words are against science, choose science" Mustafa Kemal Atatürk.

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