Photoaging-an overview: Nanotechnology and Photoprotection

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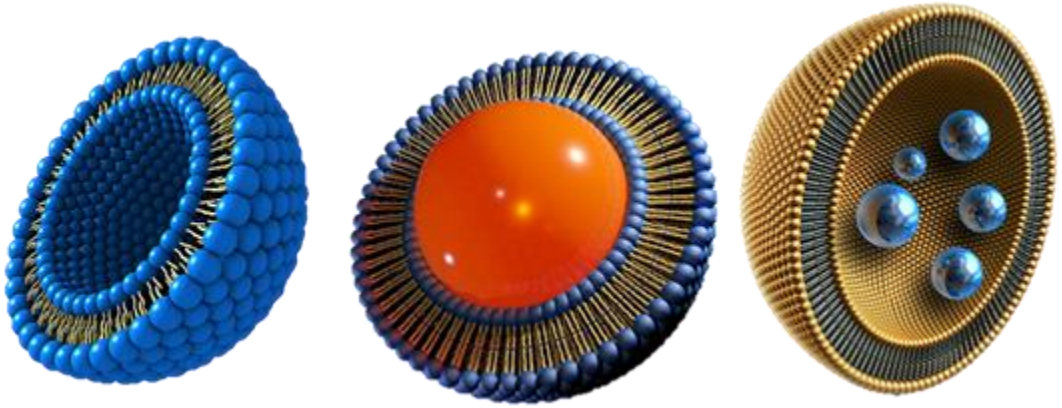
ABSTRACT

Skin is the outermost part of our body which is continuously exposed external assaults especially UV radiations. Prolonged exposure of unprotected skin to ultraviolet radiation (UVR) include inflammation, premature photoageing, DNA damage, photocarcinogenesis, and immunosuppression. Five most significant signs of aging skin are; wrinkles, dark spots and uneven skin tone, sagging, dry skin and open visible pores.

Sunscreen will continue to be an important component of Photoprotection. The active ingredients in topically applied sunscreens generally fall into two categories: organic or inorganic. Among inorganic actives, nanosized TiO_2 and ZnO are being used since 1980. These first generation nano sunscreens shown various disadvantages which will be discussed in this talk.

The current sunscreens on the market are more aesthetically acceptable and superior to older generation sunscreens due to more advanced nanoparticle technology. Emphasis of discussion will be on encapsulation efficiency, stability and degradation in blood circulation, endocytosis by target cells, endosomal escape, delivery efficiency, and toxicity of nanoparticles.

To overcome these obstacles, many types of nanocarriers are proposed; broadly into three categories; (i) lipid-based nanoparticles, (ii) polymer-based nanoparticles, and (iii) inorganic nanoparticles (**Figure 1**).



(i) (ii) (iii)

Figure 1: Different types of nanocarriers

Potential Photoprotective nanocarriers to be discussed in my talk are;

- Lignin an their derivatives
- Apple peel nanoparticles
- Morin-encapsulated nanoparticles
- Rice bran and raspberry seed oil-based nanocarriers
- Bioadhesive Nanoparticles
- Transfersomes of epigallocatechin-3-gallate (EGCG) and hyaluronic acid
- Solid Lipid nanoparticles for organic and inorganic sunscreens
- Co-loading of sunscreens in nanocarriers
- β-cyclodextrin-containing nanocarriers
- Nanoemulsions

Biography Dr. Tariq

Dr. Tariq Mahmood was born in a small village near Bahawalpur, Pakistan, in 1984. Bahawalpur is an under presented district of Southern Punjab and facilities are nominal to date. It was much hard time for him as well as for his parents to provide him opportunities to complete his Science education. He completed his college education in 2001and moved to Bahawalpur City in order to receive his Pharm.D degree in Pharmacy from the Islamia University of Bahawalpur, Bahawalpur, Pakistan, in 2008, and the M. Phil. and Ph.D. degrees in Pharmaceutics from the Islamia University of Bahawalpur, Bahawalpur, Pakistan, in 2010 and 2013, respectively.

In 2013, he joined the Department of Pharmacy, The University of Faisalabad, as an Assistant Professor, and in 2014 joined University of Central Punjab as an Assistant Professor and Deputy Director Research. Dr. Tariq has several years of experience as a faculty member at Faculty of Pharmacy and has authored several peer-reviewed publications, oral presentations, and has delivered invited professional presentations. Dr. Tariq's research interests are centered on outcomes of drug development and nanocarriers. He is HEC approved PhD supervisor and to date, has supervised more than fifteen postgraduate students in discipline of Pharmaceutics. Additionally, he is reviewer / editorial board member of several internationally recognized peer-reviewed journals. He was short-listed for prestigious LUSH prize award, UK in 2013. In Young Researcher Award category, he was the only one short-listed from all over the Asia.