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Polymeric lutein nanoparticles as nano nutraceuticals

Ravindran Girija Aswathy, Balasubramanian Sivakumar, Toru Maekawa and D Sakthi Kumar
Toyo University, Japan

Lutein is a carotenoid- non-provitamin-A, broadly present in fruits and vegetables. As human beings cannot produce carotenoids *de novo*, the presence of lutein and other carotenoids in human tissue is exclusively of dietary origin. Lutein, together with zeaxanthin, is predominantly accumulated in the macula of the retina that filters blue light (450 nm) reaching the retinal cells and inhibiting its damage. They are commonly referred to as macular pigments. Lutein, being an antioxidant pigment protects the retinal epithelial cells from reactive oxygen species. It has been reported that high serum carotenoid level and high dietary intake level of lutein are related with lower risk of age-related macular degeneration (AMD). Although the pathogenesis of AMD is not clearly understood; however, there are few evidence suggesting oxidative stress, especially caused by reactive oxygen species, contributes to onset of the disease. Research studies suggest that supplementation of lutein may decrease the risk of age-related macular degeneration (AMD), heart disease, lung cancer and skin cancer. Owing to its beneficial effects on human health, lutein has been of great interest to the food processing and pharmaceutical industries. This work aims to develop water-soluble PLGA nanoparticles with encapsulated lutein (Nan-Lut) to improve its bioavailability. Lutein-PLGA nanoparticles were prepared, characterized and bioavailability was studied *in vitro* with retinal pigment epithelial cells and with stem cells. PLGA may serve as nano carrier for augmenting the lutein bioavailability and can be recommended as enhanced dietary compound in food and pharmaceutical applications.

Biography

Ravindran Girija Aswathy received her PhD from Toyo University, Japan in 2012 in Bio-Nano Science Fusion Course. Presently, she is working as Postdoctoral Researcher in Bio-Nano Electronics Research Center, Toyo University. She has published several papers in reputed journals and her area of specialty is biocompatible nanomaterials for biological applications.

aswathyrg@gmail.com, sakthi@toyo.jp