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Protective effect of green synthesis gold nanoparticles (AuNPs) from *Pulicaria undulata* on the amyloid formation in α-lactalbumin

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The formation and deposition of protein fibrillar aggregates in the tissues is associated with several neurodegenerative diseases such as Alzheimer's and Parkinson's disease. Nanoparticles possess an enormous surface area and are found to inhibit protein amyloid formation. Recently plant-mediated nanoparticles synthesis has drawn a great deal of attention because it is rapid, environmentally friendly, cost effective and it provides a single step technique for the biosynthetic processes and is safe for human therapeutic use. The aim of this study was to assess the effect of green synthesis AgNPs from *Pulicaria undulata* L. on the reduction of protein aggregation in reduced α-lactalbumin. The results showed that green synthesis AuNPs have the ability to prevent the aggregation of α-lactalbumin in a concentration-dependent manner. This inhibitory effect of AuNPs probably caused by decreasing the rate of fibrillation through surface absorbing of free monomeric peptides and prevent amyloid fibril formation. In fact, by increasing the concentration of AuNPs within a specified range, the adsorption and interaction between AuNPs and protein have increased and protein conformational changes and self-association decreased, thus amyloid aggregation is prevented. In the main, results of this study show that green AuNPs mediated by *Pulicaria undulata* L. has the capability in inhibiting amyloid fibril formation and can be used as a therapeutic approach in the treatment of amyloid disease such as Alzheimer disease.

Biography

Arezou Ghahghaei completed her PhD from University of Australia (Wollongong). She is Biochemist, Associated Professor and Head of Department of Biology. Her research focuses on pharmaceutics effect on protein aggregation. She has published several papers in reputed journals.

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