

## **Chitosan nanoparticles containing *Physalis alkekengi*-L extract: preparation, optimization and their antioxidant activity**

REZA MAHMOUDI<sup>1</sup>, MARYAM TAJALI ARDAKANI<sup>1</sup>, BEHNAM HAJIPOUR VERDOM<sup>2</sup>, ABOUZAR BAGHERI<sup>3</sup>, HOSSEIN MOHAMMAD-BEIGI<sup>4</sup>, FARHANG ALIAKBARI<sup>5,6</sup>, ZEINAB SALEHPOUR<sup>7</sup>, MOHSEN ALIPOUR<sup>8</sup>, SAJAD AFROUZ<sup>1</sup> and HASSAN BARDANIA<sup>1</sup>

Abstract:

*Physalis alkekengi*-L is a medicinal herb with a high antioxidant capacity. It is used to treat various diseases. In this study, encapsulation of the hydro-alcoholic extract of *P. alkekengi*-L into chitosan nanoparticles (CNPs) was optimized by using response surface methodology, and its antioxidant capacity and anticancer activity were investigated. The results of the antioxidant capacity evaluation showed that the antioxidant activity of the chitosan nanoparticles containing extract did not significantly decrease by increasing the time of storage (over a 12 day period) as compared to that of un-encapsulated extracts. In conclusion, CNPs can be used to encapsulate and improve the stability of *P. alkekengi*-L extract and its antioxidant properties.

Keywords. *Physalis alkekengi*-L; chitosan nanoparticles; antioxidant activity; stability of extract.