

Functional Food with Nanoparticles for Cardiovascular Health

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Globally, Cardiovascular diseases (CVDs) are the major cause of morbidity and mortality, approximately 31% of all mortalities [1]. Lifestyle linked conditions for example obesity, hyperlipidemia, type 2 diabetes, and hypertension also getting common and dominant day by day. There are many treatments available for CVDs like medications, surgeries and life style modifications, as well as many patients also use complementary and alternative therapies [2]. The focus of research now days had been toward the use of functional food which can play significant role in cardioprotection. Ajwa date has been recognized to contain the most nutritional and medicinal properties. These are a rich source of nutrition, containing sugars, proteins, vitamins, high dietary fibers, minerals and fats, various phytochemicals like sterols, polyphenols, flavonoids and glycosides [3]. Al-Yahya, *et al.* [5] has reported that Ajwa dates help to prevent the depletion of endogenous antioxidants, repressed lipid peroxidation and myocyte injury marker enzymes. Additionally, Ajwa dates also reduced myonecrosis and decreased the cardiac cytotoxicity [4].

With recent and innovative approaches, Nanomedicine is an emerging and developing field. It is used for diagnosis, delivery, sensory methods and trigger materials in living cells. Combination of nanoscience with pharmaceutical approach has paved new paths for the creation and characterization of novel drugs. Nanostructures can act as delivery mediators by encapsulating drugs and carry them to target tissues more accurately with a measured release it remains in the blood circulation system for a long period and permit the release of amalgamated drugs as per the required dose and have reduced adverse effect [5]. Many natural compounds have been tested with combination of nanotechnology to enhance their bioavailability and efficacy Nanotechnology is being tested for the provision and adoption of new strategies of combating cancer and various other diseases. Presently, two polymers, poly (lactide-co-glycolide) (PLGA) and polylactide (PLA) are FDA-approved for drug designing [6].

In recent animal experimental study, Ajwa nanodrug was tested against doxorubicin-associated cardiotoxicity, it suggested the cardio-protective effect of Ajwa, the results revealed reduction in the prolongation of QT interval, the injury of cardiomyocyte was diminished and the antioxidant capacity of tissues were increased. The Ajwa nanodrug significantly reversed the LVSP, which reflects the increase in cardiac function [7]. More preclinical and clinical studies should be performed on Ajwa nanodrug on cardiovascular preventive and treatment measures to find new ways to reduce the burden and increase the availability of more effective therapeutic options. The sustained release systems of nanodrug combined with naturally occurring therapeutic compounds and minimizing their adverse effects can provide new alternatives for the cure of prolonged diseases.

Conflict of Interest

None.

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