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Plenary Lecture II: Preventive and Therapeutic Role of Nanonutraceuticals in Human Diseases

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Abstract

We developed a number of nanonutraceuticals inspired by Prophetic and Quranic Medicines including camel derived products to treat sickle cell disease, a sulfated non-anticoagulant low-molecular weight heparin (SNACH). Camel-derived SNACH has been shown pre-clinically to be more efficacious than the currently available therapies for sickle cell disease and sickle cell crisis due in part to its multi-model mechanisms of actions. While current therapies attempt to treat sickle cell disease via single mechanism, SNACH has a number of independent mechanisms of action that serve to rapidly resolve or prevent sickle cell crises by acting as an anti-sickling, anti-thrombotic, anti-selectin, and anti-adhesive. Nanoformulated SNACH with camel milk lactoferrin demonstrated high oral bioavailability in Sickle cell, cancer, inflammatory, and infectious diseases. Additionally, numerous Nanoformulations have been developed improved oral bioavailability of Thymoquinone and other natural bioactive compounds. Current studies give a review of the applications of Nanomedicine to enhance the biological activities of TQ to control different diseases. Nano-TQ effectively augments the anticancer roles of doxorubicin by upregulation of P53, downregulation of Bcl2 and potentiated paclitaxel's apoptosis in MCF-7, breast cancer cell. Moreover, Nano-TQ protects against diabetes, inflammation, antimicrobial, and hepatotoxicity mainly by enhancement of organs' antioxidant status. It is evident that Nano-TQ is a promising nutraceutical for human health in the prevention and treatment of various disorders.

We have also applied his expertise in the area of Nanoformulation to use natural products, such as mushroom and shellfish-derived polycationic chitosan or camel milk, lactoferrin to Nanoformulated prophetically recommended products such as Ajwa dates, musk, black seed, and others for effective development and delivery as pharmaceutical products to treat various diseases.

