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Resveratrol nanoformulation for cancer prevention and therapy.

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Abstract

Chemoprevention of human cancer(s) is a viable option for cancer control, especially when chemopreventive intervention is involved during the early stages of the carcinogenesis process. Naturally occurring bioactive food components, such as dietary polyphenols, have shown good antioxidant activity and other beneficial activities. In addition, compounds belonging to the polyphenolic chemical class may play promising roles in cancer prevention. Among them, the phytoalexin resveratrol has demonstrated antiproliferative effects, as well as the ability to inhibit initiation and promotion of induced cancer progression in a wide variety of tumor models. However, resveratrol, like other natural polyphenols, is an extremely photosensitive compound with low chemical stability and limited bioavailibility, which limit the therapeutic application of its beneficial effects. In this context, the development of innovative formulation strategies able to overcome physicochemical and pharmacokinetic limitations of this compound could be beneficial. This may be achieved via nanotechnology approaches utilizing suitable carriers that allow slow, sustained, and controlled release of the encapsulated agent. This review focuses on the recent developments of novel nanoformulations used to deliver sustained levels of resveratrol.

KEYWORDS: chemoprevention; drug delivery; nanochemoprevention; nanoformulation; resveratrol

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