

ABSTRACT

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Therapeutic potentials of genistein: New insights and perspectives.

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Genistein, a polyphenolic isoflavone compound found abundantly in soy or soy-based products, is widely consumed in the Asian population. Genistein has poor bioavailability, to overcome this problem many advanced nano-drug delivery carrier systems are designed to enhance its water solubility and stability. However, further research is required to develop more efficient bioavailability improvement strategies. Genistein is a phytoestrogen which has been associated with reducing the risk of cancer, cardiovascular disorders, and diabetes mellitus. This plant-based bioactive compound possesses numerous biological activities such as anti-oxidant, anti-inflammatory, anti-obesity, anti-cancer, cardioprotective, and anti-diabetic activities to treat various disease states. Genistein has been used as an active therapeutic agent in many medications. Moreover, several clinical trials are in the ongoing stage to develop more efficient treatment therapies, especially for cancer treatment. This article highlights the protective and therapeutic benefits of genistein in the treatment of different ailments, and more specifically elaborates on the anti-cancer potential of genistein regarding various types of cancers.

PRACTICAL APPLICATIONS: Genistein possesses versatile biological activities, including anti-diabetic, anti-inflammatory, anti-oxidant, anti-obesity, and anti-angiogenic. The most studied activity is anti-cancer. Currently, a number of pre-clinical and clinical trials are being carried out on anti-neoplastic and cytotoxic activities of genistein to develop novel therapeutic agents with excellent anti-cancer potential for the treatment of various kinds of cancer. Moreover, many bioavailability enhancement strategies have been developed to improve the bioavailability of genistein. Genistein shows significant hypoglycemic effects alone or in combination with other anti-diabetic agents. Genistein in combination with other chemotherapeutic agents is used for the treatment of prostate, bone, colorectal, glioma, breast, and bladder cancer.

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