

عنوان مقاله:

Berberine efficacy against doxorubicin-induced cardiotoxicity: A systematic review

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خلاصه مقاله:

Cardiotoxicity is one of the main complications of chemotherapy that increases morbidity and mortality in cancerous patients. The present systematic review aimed to investigate the protective effects of berberine (Ber) on doxorubicin (Dox)-induced cardiotoxicity. The study protocol was developed following the PRISMA statement. An extensive search was performed in multiple databases, including Embase, PubMed, Cochrane library, Web of Science, and Scopus. After defining the inclusion/exclusion criteria of the study, ۱۲ records were included. The desired data of the retrieved articles were extracted from the studies and imported into an Excel form and ultimately, the effects, probable outcomes and mechanisms were surveyed. By activating sirtuin ۱ (SIRT1), Ber caused reduced oxidative damage and loss of mitochondria integrity in cardiomyocytes. It also regulated autophagy and apoptosis via down-regulating AMP-activated protein kinase (AMPK), nucleotide-binding oligomerization domain, leucine rich repeat, and pyrin domain containing protein (NLRP) activation. Moreover, Ber increased superoxide dismutase (SOD), catalase (CAT), and plasma glutathione peroxidase (GSH-Px) activities, reduced the levels of malondialdehyde (MDA), up-regulated SIRT3, and subsequently reduced oxidative stress in cardiomyocytes and loss of mitochondria integrity, leading to developed apoptosis and regulating the histopathological and electrocardiogram changes in the myocardium. It also ameliorated the DOX-induced calcium ions (Ca²⁺) and iron overload. Ber reduced oxidant and inflammatory activity, and regulated apoptosis of cardiomyocytes, thus protecting the cells against DOX-induced cardiotoxicity.

کلمات کلیدی:

Umbellatine, Chemotherapy, Adriablastin, Cardiac toxicity, Heart

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