DIALLYL TRISULFIDE ATTENUATES DOXORUBICIN-CARDIOTOXICITY IN RATS

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Diallyl trisulfide (DATS) is a natural donor of hydrogen sulfide isolated from garlic. The aim of the study was to examine the effects of DATS against doxorubicin (DOX)-induced cardiotoxicity in rats.
Thirty rats were divided into three groups: CTRL (healthy untreated rats, n=10), DOX (rats injected with a single dose of doxorubicin 15 mg/kg ip on the 14th day of experiment, n=10), DOX+DATS (rats treated with 16 mg/kg DATS per day during the experiment and 15 mg/kg doxorubicin ip on the 14th day). Three days after DOX-treatment rats were sacrificed, in vivo hemodynamic was measured by echocardiography, while ex vivo cardiodynamic parameters of isolated rat hearts were monitored on Langendorff apparatus. Systemic oxidative stress parameters were determined in blood and histopathological examination of the heart was performed.
DATS treatment led to a minor increase in the ejection fraction in the DOX group, while the levels of free radicals were significantly decreased. Histopathological examination corroborated these findings by demonstrating significant and severe structural injury in the cardiac tissue of DOX rats.
Our study demonstrated that DATS can be an important cardioprotective agent against doxorubicin-cardiotoxicity through modulation of oxidative stress and the possibility to improve myocardial performance and morphometric structure of rats` hearts.

Keywords: Cardioprotective agents; Cardiotoxic agents; Pharmaceutical potential; Oxidative stress