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**An anthraquinone compound and its protective effects against Homocysteine-induced cytotoxicity and oxidative stress**

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**Abstract:** In this work, we designed an anthraquinone derivative: 1,4-diacrylateanthracene-9,10-dione (DAAD) with antioxidant activity for preventing Alzheimer's disease (AD) through preventing the neurotoxicity of Homocysteine (Hcy). This compound has very low cytotoxicity and protects the cells against Hcy-induced cytotoxicity and oxidative stress. Thus, maybe DAAD can be used as a potential reagent to preventing AD. In addition, we investigated the UV-Vis and fluorescence spectra of DAAD in PBS (pH 7.29) / DMSO (v/v, 1:1) solution for detecting Hcy, and the detection limit of DAAD for Hcy was found to be 0.121  $\mu\text{M}$ . Thus, DAAD also can be used to monitor the Hcy level in plasma and cells.

**Keywords:** 1,4-diacrylateanthracene-9,10-dione; Antioxidant activity; Homocysteine; Alzheimer's disease;

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