PROTECTIVE EFFECTS OF XANTHOCERASIDE ON PC12 CELL DAMAGE INDUCED BY HOMOCYSTEINE

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Introduction: Xanthoceraside is a monomer compound extracted from the fruit shell of a plant called Xanthoceras sorbifolia Bunge which grows in China specially. Xanthoceraside was found to alleviate learning and memory impairment in AD and VD animals in our previous study. Epidemiological studies have indicated elevated plasma homocysteine is a risk factor for AD.

Aims: To investigate the protective effects of Xanthoceraside on PC12 cells damage induced by homocysteine and the possible mechanisms involved.

Methods: PC12 cells damage model was established by 10 mmol/L homocysteine and MTT assay was applied to test the cell viability. AO/EB staining was used to observe the morphological changes of cells. Flow cytometry with Annexin V-PI double staining was used to confirm the apoptosis. We analyzed the cell cycle distribution using PI staining, measured mitochondrial membrane potential (MMP) using rhodamine 123 as fluorescent dye and also measured intracellular calcium concentration using a calcium probe (Fluo-3/AM) by flow cytometry.

Results: Xanthoceraside (0.015, 0.15, 1.5µmol/L) can dose-dependently increase cell viability and reduce apoptosis rate of PC12 cells. Xanthoceraside could significantly stabilize MMP state and reduce abnormal elevation of intracellular calcium concentration.

Conclusions: These findings suggest that Xanthoceraside could reduce the damage of PC12 cells induced by homocysteine, the mechanisms of anti-apoptosis effects might be related to stabilize MMP state and reduce abnormal elevation of intracellular calcium concentration.