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03. NEUROPHYSIOLOGY

QUERCETIN EFFECTS ON CHRONIC UNPREDICTABLE STRESS-INDUCED BRAIN DAMAGE

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Abstract

Stress is known to alter the cellular homeostasis in brain and may involve various forms of neurotoxicity including neuronal death. The particular effects of experimental chronic unpredictable stress (CUS) in brain damage are poorly studied. This study aims to examine the oxidative and nitrosative damage, inflammation, and involvement of Bcl-2 and caspase 3 in CUS-induced brain damage, and to investigate the potential preventive role of the flavonoid Quercetin (QUR) against such damage. Forty rats were randomized into 4 groups (n=10; each): Control+vehicle, Control+ QUR, CUS+vehicle, and CUS+QUR. CUS was applied for 3 weeks, during which the vehicle (NS) or QUR (50 mg/kg) were i.p. administered daily. Data are expressed as means ±SD, and significant differences were recognised at (P< 0.05). In the brains of the CUS stressed rats, there were significant elevations in the levels of MDA (2.3±0.04 vs. 0.98±0.04 µM), TNF-α (2.9±0.42 vs. 0.81±0.21 pg/mg), IL-6 (38.2±4.7 vs. 18.7±2.2 pg/mg), iNOS (5.4±2.4 vs. 3.1±0.48 pg/mg) and caspase 3 (0.50±0.04 vs. 0.15±0.02 ng/mg), with concomitant significant decreases in the activities of SOD (10.8 ±0.76 vs. 25.6 ±2.9 U/mg) and GPX (80.2±4.9 vs. 121.6+8.2 nmol/min/ml) and levels of Bcl-2 (2.9±0.49 vs. 7.8±0.63 ng/mg). QUR treatment to CUS stressed brought all of these parameters to control levels. These data hypothesizes that supplementation with quercetin ameliorates CUS-induced brain damage by its anti-oxidant, anti-inflammatory and anti-apoptotic potentials.