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还脑益聪方对*D*-半乳糖结合半高脂饲料致认知障碍模型大鼠学习记忆和抗氧化作用的影响

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摘要 目的 应用*D*-半乳糖结合-高脂饲料制作大鼠认知功能障碍的动物模型,观察大鼠学习记忆能力和体内氧化应激的变化及还脑益聪方对复合因素所致认知功能障碍模型的影响。方法 清洁级SD大鼠,应用*D*-半乳糖(50 mg·kg^{-1})颈背部皮下连续注射并结合半高脂饲料喂食制备认知障碍模型。 采用Morris水迷宫实验检测大鼠的学习和记忆能力,用HE染色方法检测海马神经元细胞,比色法测定血清和脑组织中超氧化物歧化酶、丙二醛、总抗氧化力和谷胱甘肽氧化酶的活性。结果 认知功能障碍模型组大鼠的学习记忆功能较假手术组显著降低,海马区细胞明显减少,血清及组织超氧化物歧化酶水平显著降低,丙二醛水平显著增高($P<0.05$),血清和组织中总抗氧化力、谷胱甘肽氧化酶含量显著降低($P<0.05$)。还脑益聪方灌胃给药可显著改善动物的空间学习记忆能力,提高超氧化物歧化酶水平,降低丙二醛活性,增强血清和海马组织中总抗氧化力、谷胱甘肽氧化酶活性。结论 *D*-半乳糖结合半高脂饲料可造成大鼠氧化应激异常,导致认知功能障碍。还脑益聪方可显著提高大鼠抗氧化应激能力,改善大鼠的学习记忆和空间认知能力,提高抗衰老能力。

关键词: 还脑益聪方 认知功能障碍 阿尔茨海默病 氧化应激 水迷宫

Abstract: OBJECTIVE To produce a rat model of cognitive impairment by *D*-galactose combined with a high fat diet method, and observe the learning and memory function and the change of oxidative stress indexes of the model rats. Discuss the effects of Huannao Yicong Fomula(HNYCF) on learning, memory and oxidative stress of the model. METHODS The cognitive impairment rat model was induced by hypodermic injection of *D*-galactose and combined with half fat diet. Morris water maze test was used to detect the learning and memory ability. The level of SOD, MDA, T-AOC,GSH-PX was tested. RESULTS in model group, the learning and memory ability was severely impaired, hippocampal neurons were reduced, SOD, T-AOC, GSH-PX level significantly decreased, MDA level increased. The administration of HNYCF improved memory ability, improved SOD, T-AOC, GSH-PX levels, reduced MDA activity in serum and hippocampus tissues. CONCLUSION *D*-Galactose combined with high fat diet can cause disorders of oxidative stress in rats, leading to cognitive impairment. HNYCF can significantly improve the antioxidant stress ability, improve learning, memory and spatial cognitive ability of rats.

Keywords: Huannao Yicong Fomula, cognitive impairment, Alzheimer′s disease, oxidative stress, Morris water maze

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