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甲醛对小鼠造血调控相关转录因子在mRNA水平表达的影响

The effects on the level of mRNA expression of hematopoietic regulation related transcription factors in mice bone marrow under the exposure to formaldehyde

关键词: [甲醛](#) [小鼠](#) [转录因子](#) [造血调控](#) [白血病](#)

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摘要: 为了研究甲醛污染毒性的分子机制,探究了气态甲醛暴露对小鼠造血调控相关转录因子在mRNA水平表达产生的影响.实验将18只雄性Balb/C小鼠随机分为3组,每组6只,采用仿真式口鼻吸入方法暴露于不同浓度(0.5 mg·m⁻³和3.0 mg·m⁻³)的气态甲醛环境中,每天8 h,为期2周.染毒结束后,分别进行血细胞分析和RT-PCR测定小鼠骨髓相关髓系转录因子、红系和巨核系转录因子、淋巴系转录因子在mRNA水平的表达量.结果发现,与对照组相比,相关转录因子C/EBPα、SCL、GATA-2、c-myb、GATA-1及淋巴系转录因子在mRNA水平表达量随甲醛浓度的升高受到不同程度的影响,部分具有统计学差异(p<0.05).其中,转录因子C/EBPα、SCL及GATA-2在mRNA水平表达量随甲醛浓度的升高而降低,而转录因子c-myb、GATA-1及淋巴系转录因子Iklzf5、PAX5在mRNA水平表达量随甲醛浓度的升高而升高.研究表明,高浓度甲醛暴露会影响小鼠骨髓造血调控相关转录因子的正常表达.

Abstract. The aim of this study was to explore the molecular mechanism of formaldehyde toxicity, as well as the effect of gaseous formaldehyde in the expression of hematopoietic regulation related transcription factors at mRNA level in mice. 18 male Balb/C mice were randomly divided into three groups (6 in each), and then exposed to formaldehyde by nose-only inhalation at doses of 0, 0.5, and 3.0 mg·m⁻³ for 8 hours per day for 2 weeks. After exposure, blood cell analysis followed by reverse transcription polymerase chain reaction (RT-PCR) were used to detect the expression at mRNA level of several factors including mouse bone marrow related myelogenous transcription factor, red blood and megakaryocytes transcription factors, and the lymphoid transcription factors. Compared with the control group, the influence of increasing formaldehyde on the level of mRNA expression in a series of transcription factors, including C/EBPα, SCL, GATA-2, c-myb, GATA-1 and the lymphoid transcription factor, were at different degrees, with some significant (p<0.05). The mRNA expression of C/EBPα, SCL, GATA-2 decreased while the mRNA expression of c-myb, GATA-1 and the lymphoid transcription factors Iklzf5, PAX5 increased in response to increasing formaldehyde concentration. It was concluded that the exposure to formaldehyde at high concentrations could affect the normal expression of hematopoietic regulation related transcription factors in mice bone marrow.

Key words: [formaldehyde](#) [mice](#) [transcription factors](#) [hematopoiesis regulation](#) [leukemia](#)

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