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论著

巯基乙酸对小鼠成熟卵母细胞皮质颗粒分布和MAPK活性的影响

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摘要 背景与目的： 探讨巯基乙酸(thioglycolic acid, TGA)对小鼠卵母细胞胞浆成熟和相关生化指标的影响。材料与方法： 以不同浓度TGA(0.2、1.0、2.5 mmol/L)体外培养小鼠卵母细胞，并设M16培养液对照组，培养16 h后在体视显微镜下，观测卵母细胞生发泡破裂和第一极体排出情况，用免疫荧光染色方法对皮质颗粒(cortical granules, CGs)进行标记，采用western blot方法对p44/42MAPK进行检测。 结果： 各组生发泡破裂率均达到90％左右，各组间差异无统计学意义(P>0.05)。随着TGA剂量的增加，第一极体排出率下降，各剂量组和对照组相比差异均有统计学意义(P<0.05)。各剂量组均可观察到CGs在细胞膜下的线状排列，但随着TGA剂量的增加，质膜下CGs的密度降低，胞浆中CGs的密度有增加的趋势。对照组卵母细胞中有非常明显的无皮质颗粒区(cortical granules free domain, CGFD)形成，0.2 mmol/L组也形成了CGFD，但1.0 mmol/L和2.5 mmol/L两个剂量组未观察到CGFD。1.0 mmol/L和2.5 mmol/L TGA可抑制p44/42MAPK的活化。 结论： TGA可影响小鼠卵母细胞细胞质成熟和MAPK的活性，具有一定的生殖毒性。

关键词 巯基乙酸 皮质颗粒 MAPK 卵母细胞 小鼠

Effects of Thioglycolic Acid on Cortical Granule Redistribution and MAPK Activation in Mouse Oocytes

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Abstract BACKGROUND AND AIM: To explore the effect of Thioglycolic acid (TGA) on cytoplasmic maturation and related molecular factors of mouse oocytes. MATERIALS AND METHODS:Mouse oocytes were matured in vitro cultured with serial doses of TGA. Immunoflurescence staining was used to label cortical granules (CGs) and p44/42MAPK was measured by western blot. RESULTS: Rate of germinal vesicle-breakdown in each group reached 90％ and comparison was insignificant (P>0.05). Rate of first polar body decreased with increasing TGA dose, the comparison between control and treatments was significant (P<0.05).CGs of oocytes from all groups migrated to the cortex and formed a continuous layer under the cell membrane, but CGs density in the cytoplasm became higher with increasing TGA treatment dose. Obvious cortical granule free domain (CGFD) was observed at 0 mmol/L TGA, in 0.2 mmol/L TGA CGFD could still be seen, but not in 1.0 mmol/L and 2.5 mmol/L TGA groups. Meanwhile, TGA inhibited p44/42MAPK activation in 1.0 mmol/L and 2.5 mmol/L treatment groups. CONCLUSION: TGA exerted reproductive toxicity since it interfered with cytoplasmic maturation and MAPK activation of mouse oocytes.

Keywords thioglycolic acid cortical granule MAPK oocyte mouse

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