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论著

巯基乙酸对孕酮诱导爪蟾卵母细胞体外成熟过程中MAPK和MPF激酶活性的影响

张 岭1，侯绍英1，吴 坤1， ，夏 蕾2

1.哈尔滨医科大学公共卫生学院，黑龙江 哈尔滨 150081; 2. 哈尔滨医科大学附属第一医院生殖医学中心，黑龙江 哈尔滨 150001

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摘要 背景与目的： 探讨巯基乙酸(TGA)对孕酮诱导爪蟾卵母细胞体外成熟过程中丝裂原激活蛋白激酶(MAPK)和成熟促进因子(MPF)蛋白激酶活性的影响。 材料与方法： 用0、5、25和125 μg/ml 浓度的TGA分别处理经孕酮诱导的体外培养爪蟾卵母细胞，另设不含孕酮的阴性对照组，于处理4 h和8 h收集卵母细胞进行Western Blotting检测，观察p-Erk1/Erk1蛋白、p-RSK蛋白、Cdc2、p-Cdc2和Cyclin B1蛋白的表达情况。 结果：TGA处理爪蟾卵母细胞4 h后，Erk1蛋白的磷酸化水平(即MAPK的活性水平)，较对照组明显增加(P<0.05)；MAPK的活性底物p-RSK蛋白的表达也增加(P<0.05)；同时伴随着p-Cdc2表达水平的下降和Cyclin B1蛋白表达的增强(P<0.05)。TGA处理8 h后Erk1蛋白磷酸化水平和p-RSK蛋白含量与对照组相比无明显差异(P>0.05)，但此时TGA组p-Cdc2水平明显增加(P<0.05)，Cyclin B1蛋白的表达降低(P<0.05)。 结论： 在孕酮诱导的爪蟾卵母细胞体外成熟早期，TGA可促进MPF和MAPK蛋白激酶及其底物p-RSK的活化；在成熟的晚期，TGA对MAPK活性无明显影响，但明显抑制MPF活性。TGA影响MPF活性的可能机制是降低Cyclin B1蛋白水平。

关键词 巯基乙酸； 卵母细胞； 丝裂原激活蛋白激酶； 成熟促进因子

Thioglycolic Acid on the Activities of MAPK and MPF during Progesterone-induced Xenopus Oocyte Maturation in Vitro

ZHANG Ling1, HOU Shao-ying1, WU Kun1, , XIA Lei2,

1. Department of Nutrition and Food Hygiene, School of Public Health; Harbin Medical University, Harbin 150081, China; 2. Department of Reproductive Medicine, the First Affiliated Hospital of Harbin Medical University, Harbin 150001,China

Abstract BACKGROUND AND AIM: To investigate the effects of thioglycolic acid on the activities of MAPK and MPF protein kinases during progesterone-induced Xenopus oocyte maturation process in vitro. MATERIALS AND METHODS: Xenopus oocytes were treated with TGA in vitro at dose of 0 μg/ml，5 μg/ml，25 μg/ml and 125 μg/ml, and samples collected at 4 h and 8 h after culture for Western Blotting detection of Erk1, p-Erk1, p-RSK, Cdc2, p-Cdc2 and cyclin B1 protein expressions. RESULTS: Obviously higher phosphorylation levels of Erk1 protein, indicated by the photodensity ratio of p-Erk1 and Erk1, and lower p-Cdc2 protein levels, compared with those of the control, were found in TGA-treated Xenopus oocytes at 4 h, accompanied by higher levels of p-RSK and Cyclin B1. However, there was no difference in these proteins,except higher p-Cdc2 phosphorylation and lower Cyclin B1 protein, between TGA-treated and control group at 8 h. CONCLUSION: TGA treatment could promote the activation of MAPK including its substrate RSK, and MPF at the early stage of maturation process. At the late stage, no evident impact was found of TGA on the activity of MAPK. There was obvious inhibition on MPF activity by TGA possibly through regulation of Cyclin B1 protein.

Keywords thioglycolic acid oocytes MAPK MPF

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通讯作者　夏　蕾 xialeiivf@163.com