

论著

双酚A对大鼠卵泡体外生长和卵母细胞成熟的影响

夏仪, 王卓, 张天宝

第二军医大学毒理学教研室, 上海 200433

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摘要 目的 观察双酚A(BPA)对大鼠卵泡体外生长发育及卵母细胞成熟的影响。方法 采用大鼠卵泡体外长期培养方法,从12~14 d龄的雌性大鼠卵巢中机械性分离腔前卵泡(140~170 μm),隔天分别换一半含BPA 0, 50, 100和150 μmol·L⁻¹的培养液,连续培养10 d。倒置相差显微镜下观察卵泡发育的形态,计算卵泡存活率、有腔卵泡形成率和卵丘-卵母细胞复合体(COC)排出率,测定卵泡直径,显微镜下观察卵泡的排卵情况以及卵母细胞成熟情况,计算生发泡(GV)、生发泡破裂(GVBD)和第一极体(PB)的形成率;分别于培养2, 6和10 d时采用磁性酶联免疫法测定培养基中雌二醇和孕酮的分泌量。结果 正常对照组卵泡在10 d培养过程中,大多数正常对照组卵泡都经历了腔前卵泡、有腔卵泡以及成熟卵泡阶段。与正常对照组相比,BPA 100和150 μmol·L⁻¹组的卵泡存活率、有腔卵泡形成率、COC排出率、GVBD率以及PB率均明显降低($P<0.05$)。BPA 50 μmol·L⁻¹组培养10 d时的卵泡直径以及培养6和10 d时BPA 100和150 μmol·L⁻¹组卵泡和卵母细胞的直径均明显降低($P<0.05$);与正常对照组相比,BPA 100和150 μmol·L⁻¹组卵泡膜细胞和颗粒细胞的增殖受到明显抑制($P<0.05$)。与正常对照组相比,BPA 100和150 μmol·L⁻¹组在培养6和10 d时雌二醇和孕酮含量均显著减少($P<0.01$)。结论 BPA 100和150 μmol·L⁻¹可抑制大鼠卵泡的生长和卵母细胞的成熟。

关键词 [双酚A](#) [生殖毒性](#) [卵泡](#) [体外培养](#)

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Effect of bisphenol A on rat follicle growth and oocyte maturation in vitro

XIA Yi, WANG Zhuo, ZHANG Tian-bao

Department of Toxicology, the Second Military Medical University, Shanghai 200433, China

Abstract

OBJECTIVE To observe the effect of bisphenol A (BPA) on rat follicle *in vitro* growth and oocyte maturation. **METHODS** Using *in vitro* long-term culture method rat follicles, preantral follicles (140-170 μm) were mechanically isolated from 12-14-day-old female rats and randomly divided into BPA 50, 100, 150 μmol·L⁻¹ groups and normal control group, and then cultured for 10 d. Then the morphology of follicle development was observed under a microscope and follicle survive antrum cumulus-oocyte cell complexes (COC), germinal vesicle breakdown (GVBD) and first polar body (PB) rates were calculated, steroid hormone production, ovulation rate and oocyte maturation rate to evaluate the effect. **RESULTS** During 10 d of culture, follicles in normal control group the preantral follicles, antral follicles and mature follicle stage. Compared with normal control group, follicle diameter at 10 d in BPA 50 μmol·L⁻¹ group decreased ($P<0.05$), follicle diameter and oocyte diameter in BPA 100 and 150 μmol·L⁻¹ groups at 6 and 10 d were reduced($P<0.05$). Compared with normal control group, the rates of follicle survival, cavity formation, the release of COC and PB in BPA 100 and 150 μmol·L⁻¹ groups statistically decreased ($P<0.05$). In BPA 100 and 150 μmol·L⁻¹ groups, the proliferation of theca cells and granulosa cell were suffered a different degree of inhibition($P<0.05$). Compared with normal control

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