中国中药杂志
China Journal of Chinese Materia Medica

白芸豆植物凝集素对小鼠胚胎发育的影响

投稿时间： 2010-07-07 责任编辑：张宁宁 点此下载全文

引用本文：张丽芬,王昌梅,杨明洁,张田,王敏康.白芸豆植物凝集素对小鼠胚胎发育的影响[J].中国中药杂志,2011,36(12):1665.

DOI：10.4268/cjcmm20111227

作者中文名	作者英文名	单位中文名	单位英文名	E-Mail
张丽芬	ZHANG Lifen	云南师范大学 生命科学学院 生物能源持续开发利用教育部工程研究中心, 云南 昆明 650092	Engineering Research Center of Sustainable Development and Utilization of Biomass Energy, Ministry of Education, School of Life Sciences, Yunnan Normal University, Kunming 650092, China	
王昌梅	WANG Changmei	云南师范大学 生命科学学院 生物能源持续开发利用教育部工程研究中心, 云南 昆明 650092	Engineering Research Center of Sustainable Development and Utilization of Biomass Energy, Ministry of Education, School of Life Sciences, Yunnan Normal University, Kunming 650092, China	
杨明洁	YANG Mingjie	云南师范大学 生命科学学院 生物能源持续开发利用教育部工程研究中心, 云南 昆明 650092	Engineering Research Center of Sustainable Development and Utilization of Biomass Energy, Ministry of Education, School of Life Sciences, Yunnan Normal University, Kunming 650092, China	
张田	ZHANG Tian	云南师范大学 生命科学学院 生物能源持续开发利用教育部工程研究中心, 云南 昆明 650092	Engineering Research Center of Sustainable Development and Utilization of Biomass Energy, Ministry of Education, School of Life Sciences, Yunnan Normal University, Kunming 650092, China	
王敏康	WANG Minkang	云南师范大学 生命科学学院 生物能源持续开发利用教育部工程研究中心, 云南 昆明 650092	Engineering Research Center of Sustainable Development and Utilization of Biomass Energy, Ministry of Education, School of Life Sciences, Yunnan Normal University, Kunming 650092, China	wangmk1998@163.com

基金项目:国家自然科学基金项目(30560056,30860128); 云南省中青年学术技术带头人后备人才培养计划项目(2005PY01);云南省教育厅科研基金项目(06Y1168,07Z11378)

中文摘要:目的: 研究不同浓度的白芸豆提取物PHA(植物凝集素)对小鼠胚胎体外发育的影响。 方法 :实验一,采用添加不同浓度PHA的M16培养液培养小鼠2-细胞期胚胎,观察72 h后的发育情况,记录囊胚及各阶段胚胎的数目。实验二,用与实验一相同浓度的PHA预处理从1-细胞到囊胚不同发育阶段的胚胎24 h,然后移入不含PHA的培养液中继续培养,观察到囊胚或孵化囊胚的发育率。 结果 :含低质量浓度PHA的培养液有促进小鼠胚胎发育的作用,即50,100 mg·L^{-1}的PHA可显著增加囊胚的数量。而含高质量浓度PHA(>1 000 mg·L^{-1})的培养液会使胚胎发育停滞在1-细胞到囊胚的不同时期,并随浓度增加表现为副凋亡或致死现象。 结论 :不同浓度PHA可对小鼠胚胎的体外发育具有不同的作用。1-细胞阶段的胚胎对PHA处理具有较高的敏感性。在作用时间上,24 h PHA预处理即可表现出对胚胎发育的促进或抑制作用。低浓度的PHA可促进胚胎发育,而高浓度的PHA则导致小鼠胚胎发育停滞,出现副凋亡或死亡。

中文关键词:芸豆植物凝集素 胚胎培养 胚胎发育

Effect of phytohemagglutinin (PHA) from Yunnan white kidney bean on development of mouse embryos

Abstract: Objective : To study the effect of different concentration of phytohemagglutinin(PHA) on mouse embryo development. Method : In experiment 1, crude and purified PHA extracted from Yunnan white kidney bean with different concentration were added into M16 culture medium, the final concentration of PHA were: 50, 100, 200, 500, 1 000, 2 000 and 5 000 mg·L^{-1}respectively. 2-cell stage embryos were collected and cultured in PHA containing or control medium for 72-96 h and their development were recorded. In experiment 2, different stage of embryos from 1-cell to blastocyst were treated by different concentrations of PHA same as experiment 1 and 10 000 mg·L^{-1}in culture medium for 24 h before washing and cultured in M16+PVA without PHA to blastocyst or hatching blastocyst stage. Result : Low concentrations PHA at 50-100 mg·L^{-1}promoted embryo development and increased the number of blastocyst stage embryos. In contrast, high concentrations of PHA (>1 000 mg·L^{-1}) blocked the embryos development from 1-cell to blastocyst stage and showed apoptosis morphology or death. Conclusion : Depending on the concentrations, PHA from white kidney bean shown promotion or inhibition on mouse embryo development. 1-cell stage embryo shown more sensitive to PHA treatment than that of later stage embryos. Pretreatment 24 h in PHA containing medium can influence the further development of embryos. Low concentrations of PHA is benefit to embryo development, but high concentrations of PHA (>1 000 mg·L^{-1}) will block of the development of embryos.

keywords:phytohemagglutinin (PHA) embryo culture embryo development

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