• 系統編號	RC9102-0116
• 計畫中文名稱	一氧化氮在著床前胚胎發育及凋亡扮演調節角色之研究
• 計畫英文名稱	Nitric Oxide as a Regulator in the Preimplantation Embryo Development and Apoptosis
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC89-2314-B038-039
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• 研究人員	曾啓瑞 Tzeng, Chii-Ruey
• 中文關鍵字	一氧化氮；胚胎凋亡；埋植前發育；小鼠
• 英文關鍵字	Nitric oxide (NO)；Embryo apoptosis；Preimplantation development；Mouse
• 中文摘要	查無中文摘要
• 英文摘要	Objective: To investigate the mechanisms of nitric oxide (NO) in the development and apoptosis of preimplantation mouse embryos. Design: Prospective, controlled study. Setting: Medical college laboratory. Subject(s): Two-cell embryos from outbred ICR mice. Intervention(s): Hyperstimulation protocol, two-cell embryos were collected, then treated with or without an NO synthase inhibitor (L-NAME) or an NO donor (SNP) and combined with a cGMP analogue (8-Br-cGMP) or a selective inhibitor of NO-sensitive soluble guanylyl cyclase (ODQ). Main Outcome Measure(s): The development of ICR mouse embryo from two cells to blastocyst stages in vitro. Result(s): The development of blastocyst was inhibited by L-NAME in a concentration-dependent manner (0.1–10 mM) and 0.1 mM SNP reversed this effect (80.5% of control). Annexin-V/propidium iodide and terminal deoxynucleotidyl transferase-mediated dUTP nick end-labeling techniques demonstrated that exces-sive NO ($10 mM) might induce apoptosis in the mouse embryos. 8-Br-cGMP reversed the inhibitory effect of L-NAME and rescued the embryo growth. ODQ inhibited the embryo development in a dose-responsive fashion (0.1–100 mM) but had no effect in the NO-induced embryo apoptosis. P53 and Bax were found to be up-regulated during the embryo fragmentation. Conclusion(s): These results indicate that the cGMP pathway might be involved in the NO-regulated embryonic development, but not in NO-induced apoptosis, for which P53/Bax pathway might be involved. (Fertil Sterilt 2001;75:1163–71. c2001 by American Society for Reproductive Medicine.)