

after 17 β -estradiol injection, respectively, then these mRNAs were returned to basal levels after 12 hrs. Also ICI 182780 clearly blocked the effect of estrogen. In the pregnancy day, Fra1 level was not increased, but Fra2 level was increased to peak at the time of day 1 and 2. In the preimplantation mouse embryo, these mRNA were detected from germinal vesicle oocyte stage to blastocyst stage *in vivo*.

Conclusions: Taken together, these results suggest that the expression of Fra1, Fra2 is up-regulated by estrogen, and may play an important role in the response of the uterus to estrogen.

0-6 Expression of Apoptosis Gene Bok in the Rat Ovary

전남대학교 의과대학 산부인과학교실, 호르몬 연구센터*

이여일 · 이진 · 신현우 · 김미영 · 전상영*

Bok, Bcl-2-related ovarian killer, is a proapoptotic Bcl-2 family protein identified in the ovary based on its dimerization with the antiapoptotic protein Mcl-1. The present study examined the hormonal regulation and localization of Bok messenger RNA levels in the rat ovary during the follicle development by Northern blot analysis and *in situ* hybridization, respectively. Northern blot analysis of ovaries obtained from immature rats revealed increasing levels of Bok mRNA during postnatal development. The major cell types expressing Bok mRNA were the granulosa cells of preantral and atretic follicles. Treatment of immature rats with diethylstilbestrol (DES) for 24~48 h increased ovarian Bok mRNA levels. Bok mRNA was remained the same levels in rats removed DES for 24~48 h to induce apoptosis. High signals of Bok mRNA after DES treatment were detected in granulosa cells of early antral follicles. Treatment of immature rats with pregnant mares' serum gonadotropin (PMSG) for 12 h increased markedly ovarian Bok mRNA expression which was detected mainly in preantral and atretic follicles. Interestingly, low levels of Bok mRNA were also expressed in granulosa cells of preovulatory follicles. Treatment of PMSG-primed rats with human chorionic gonadotropin (hCG) stimulated strongly ovarian Bok mRNA expression at 6~12 h. At that time, Bok mRNA was expressed in granulosa cells of atretic and small growing follicles. In adult estrus cyclic ovaries, Bok gene expression was higher on proestrus and estrus. Moreover, the highly increased expression of Bok mRNA was found in rat ovaries at 48 h after hypophysectomy. These results demonstrate Bok is one of proapoptotic Bcl-2 members expressed in early growing and atretic follicles during the ovarian follicular development. Gonadotropins induce a transient increase of Bok gene expression in granulosa cells of preantral and preovulatory follicles indicating some role in ovulatory process.