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**Progesterone inhibits cell proliferation and induces apoptosis in T47D human breast cancer cells**Hee Jin Kim<sup>1</sup>, In Young Kim<sup>2</sup> and Hyung Sik Kim<sup>1</sup>

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Progesterone plays an essential role in the development and differentiation of mammary gland. Although the involvement of progesterone in cellular proliferation and differentiation is well established, the biological or molecular mechanism of anticancer effects by progesterone still remains unclear. Therefore, the aims of the present study were to investigate the effects of progesterone on proliferation and apoptosis in T47D human breast cancer cells. The proliferation of this cell was inhibited after a 48 h incubation with 10  $\mu$  M progesterone. The expression of progesterone receptor gene was slightly decreased in a dose-dependent manner. In progesterone- treated T47D cells, apoptotic cells were detected by DNA fragmentation analysis and the morphological change induced by progesterone (10  $\mu$ M) was also detected by DAPI staining. Moreover, progesterone (10  $\mu$ M) significantly decreased the expression of p53 gene after 48 h incubation. These results clearly demonstrated that high dose of progesterone suppressed the T47D human breast cancer cells proliferation and induced apoptosis via the up-regulation of p53 gene expression.

**Keyword** : Prostaglandin, T47D cell, Apoptosis, p53, DNA fragmentation