

Ectopic Expression of Tethered Human Follicle-Stimulating Hormone (hFSH) Gene in Transgenic Mice

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Abstract

To determine whether the mammary gland can be used to secrete large quantities of a bioactive heterodimeric protein into milk, we used a bovine-casein promoter to target and express human FSH (hFSH) in the mammary gland into the milk of transgenic mice. We also identified the effects of hFSH leaked into blood stream. Transgenic mice produced a high level (up to 300 mIU/mL) of recombinant hFSH in the mammary gland. Human FSH was expressed in the mammary gland and brains determined by RT-PCR and immunohistochemistry. *in vitro* bioactivity was also identified using cAMP assay. The highest activity was showed in the transgenic mice line 11. However, hFSH leaked into the blood stream was a powerful factor to generate breast and ovarian tumor from the transgenic mice line 11. These results suggest that change of endogenous hormones (FSH and progesterone) may affect the morphology and blood cell counts of peripheral blood and especially provoke breast and ovarian tumors.

Key words) *Mammary gland, Human FSH, Casein promoter, Transgenic mouse*