

Interleukin-10 UP-regulates TRAIL Gene Expression in the Mammary Epithelial Cell at the Involution Stage

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Interleukin-10 (IL-10) is known as a regulator of inflammation and pathogenesis in mammalian organs, but its precise role is little known in the mammary gland. Our initial experiment showed that IL-10 expression levels in mice decreased at the lactation stage otherwise increased at the involution stage. To reveal the effects of IL-10 on the involution of mammary gland, expression profiles of the apoptosis-related genes were examined in transgenic mice expressing human IL-10 as well as in knock-out mice (IL-10^{-/-}). Mild inflammatory legions by lymphocytes were observed in the mammary glands of transgenic lines at the lactation stage. The expression of TRAIL (Tumor necrosis factor-Related Apoptosis-Inducing Ligand) among the apoptosis-related genes was highly elevated in the transgenic mice while others were not significantly changed. Furthermore, TRAIL was down regulated by four fold in the IL-10^{-/-} mice at the involution stage. The expression of DR4 was elevated at the involution stage of normal mice. DR4 was detected in the milk of transgenic mice but absent in that of normal mice. Our results proposed that the elevated IL-10 at the involution stage recruit lymphocytes and induce TRAIL and DR4 genes, therefore, lead to enter involution stage of mammary glands.

(Key words) IL-10, transgenic mice, TRAIL, mammary gland