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Regulation of gonadotropin subunit gene expression by testosterone and gonadotropin-releasing hormones in the goldfish

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서론

Sex steroids differentially regulate gonadotropin (GTH) β subunits (FSH β and LH β) gene expression in the pituitary of goldfish: a strong *in vivo* inhibitory effect on FSH β mRNA production, but a weak stimulatory effect on LH β in sexually immature and recrudescing fish. In the present study, to examine a direct effect of testosterone (T) and gonadotropin-releasing hormone (GnRH) on the mRNA levels of FSH β and LH β subunits in the pituitary, *in vitro* experiments were performed using dispersed pituitary cells of sexually immature, recrudescing, mature and regressed goldfish.

재료 및 방법

Fish were kept in a 1000-l indoor recirculating tank at 20°C under 14L:10D photoperiod conditions. The pituitaries were collected in ice-cold culture medium (RPMI 1640). After a brief mechanical dissociation, the washed and pelleted cells were resuspended in the culture medium and maintained at 20°C under 3% CO₂ and saturated humidity. Quantification of mRNA level in the cells was performed by Northern blot analysis.

결과 및 요약

T treatment *in vitro* did not significantly decrease FSH β mRNA levels, but increased that of LH β only in the cells of immature fish. Salmon-type GnRH increased FSH β mRNA levels in cells of mature fish, but decreased the levels in cells of sexually regressed fish. From these results, it was suggested that: (1) *in vivo* effect of sex steroids on gene expression of GTH β subunits is not always exerted on the pituitary; and (2) the different responses of GTH β subunits by sex steroids between *in vivo* and *in vitro* are partly due to a complex pathway through hypothalamic factors, such as GnRH, in the case of *in vivo*.

참고문헌

Sohn Y.C., M. Kobayashi and K. Aida. 2001. *Comp. Biochem. Physiol.* 129: 419-426