PACAP affects somatolactin-α and -β gene expression in cultured goldfish pituitary cells

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Somatolactin (SL) is a pituitary hormone belonging to the growth hormone/prolactin superfamily, and can be identified only in fish but not in tetrapods. It has been shown that gene duplication in bony fish has given rise to two paralogous SL isoforms, namely SL-α and SL-β. Recently, we have reported that pituitary adenylate cyclase-activating polypeptide (PACAP) stimulates SL release from culutured goldfish pitutiary cells. In the present study, we examined the effect of PACAP on SL-α and SL-β gene expression in cultured goldfish pituitary cells. We measured SL-α and SL-β mRNA expression levels by using a real-time PCR method. In primary cultured cells, SL-α mRNA level was decreased while SL-β mRNA expression level was increased by treatment with PACAP, but not by treatment with vasoactive intestinal polypeptide (VIP). PACAP-induced SL-β mRNA expression was blocked by treatment with the PACAP receptor (PAC_1R) selective antagonist, $PACAP_{(6-38)}$. Interestingly, $PACAP_{(6-38)}$ had not antagonized PACAP-reduced SL-α mRNA expression. These results suggest that PACAP can increase SL-β gene expression via PAC_1R and decrease SL-α gene expression via unknown pathway, respectively. Now we are examining the signal transduction mechanisms responsible for PACAP-induced SLs gene expression.