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In Vitro Biosynthesis of 17α,20β-dihydroxy-4-pregnen-3-one and Its Role in Oocyte Maturation of the Marine Fish, *Acanthogobius flavimanus*

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To investigate steroidogenesis in the ovaries of the yellowfin goby (*Acanthogobius flavimanus*), which is found at the coastal waters of the Korea, Japan and China, the intact follicles of ovaries were incubated *in vitro* with radiolabeled precursors, ^{3}H-pregnenolone, ^{3}H-17α-hydroxy-progesterone and ^{3}H-androstenedione during the oocyte maturational phases. After incubation, steroids were extracted from both the media and the isolated oocytes and the extracted steroids were separated and identified by thin layer chromatography and gas chromatography-mass spectrometry (GC-MS). Five metabolites, 17α,20β-dihydroxy-4-pregnen-3-one (17α20βOHP), androstenedione (Δ4), testosterone (T), estrone (E_1) and estradiol-17β (E_2) were identified. 17α20βOHP was the main metabolite from ^{3}H-17α-hydroxyprogesterone.

And also the effect of 17α20βOHP (5, 50 and 500 ngml^{-1}) on germinal vesicle breakdown (GVBD) was examined with two different stages of oocytes (stage I - 0.76 mm, stage II - 0.83 mm in diameters). The percentage of GVBD was significantly increased of the highest concentration of 500 ngml^{-1} in the incubation of stage I oocytes. The other teleost maturation-inducing steroid (MIS), 17,20β,21-trihydroxy-4-pregnen-3-one (17,20β,21P), which did not detected in this study also induced GVBD at the concentrations of 50 and 500 ngml^{-1}.

In the incubation of stage II oocytes, 17α20βOHP slightly stimulated the ovulation at 500 ngml^{-1}, but 17,20β,21P had no effect. The results suggest that 17α20βOHP may play a role as a MIS and potent inducer of ovulation.

Key words) *oocytes maturation, 17α,20β-dihydroxy-4-pregnen-3-one, biosysthesis, Acanthogobius flavimanus*