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The Thesis Submitted for the Degree of M.Sc (in the field of Fisheries Science)

Investigation on reproduction induce hormones performance on quantity and quality of *Schizothorax zarudnyi* sperm

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Abstract

The Snow trout (Cfidak-e-Sistan) (*Schizothorax zarudnyi* Nikolskii, 1897) is an endangered and endemic species to Hamoun Lake, Sistan, Iran. Natural fish populations have declined during the last several years because of environmental degradation due to drought and introduction of non-endemic fishes to Hamoon Lake. The purpose of this study was to evaluate the use of reproduction induce hormones, pituitary extract, ovaprim and human chorionic gonadotropin (hCG) on quantity and quality of *Schizothorax zarudnyi* sperm. Wild broods of snow trout (males 784.70±77.92 g) were caught in the broods pond and transported to Zahak hatchery for artificial spawning. The Brood fish were divided into four groups and treated with pituitary extract (0.2 mg/kg), ovaprim (0.3 mg/kg), hCG (400 I.U. /kg) and saline (0.3 ml/kg) as control group. There were a significant differences in motility duration, percentage of motile spermatozoa, milt volume, pH, percent of spermatocrit and sperm density among treatments ($p<0.05$). The highest value of motile spermatozoa and motility duration observed (81.83±2.34 and 57.68±1.76, respectively) in ovaprim treatment and the maximum milt volume, spermatocrit and sperm density observed in pituitary extract treatment (13.50±5.44, 43.55±6.51 and 0.92±0.05, respectively). The highest value of pH observed in pituitary extract and ovaprim treatments (8.00±0.07 and 7.97±0.09, respectively). The results showed that there were a significant difference of seminal plasma Na^+ and K^+, glucose and cholesterol value among all treatments ($P<0.05$). As the highest value of Na^+, K^+, glucose and cholesterol observed in ovaprim treatment (91.10±3.14 mmol/lit, 78.00±3.43 mmol/lit, 0.043±0.03 mg/dl and 0.073±0.03 mg/dl respectively). Likewise, there was a highly significant difference in seminal plasma Ca^+ among all treatments ($P<0.05$), however, as the highest value of Ca^+ observed in ovaprim and pituitary extract treatments (7.46±0.99 and 7.17±0.51 mmol/lit). Also, there was no significant difference in Mg^{2+} among all treatments ($P>0.05$). The present study demonstrated that hormonal ovaprim and pituitary extract injection to compared with hCG more effective on spermatological parameters quality in *Schizothorax zarudnyi*.

Keywords*:* *Schizothorax zarudnyi*, Ovaprim, hCG, Pituitary extrac, Spermatological parameters