Study of the composition of seminal fluid and of sperm motility along the genital tract, during a spawning season, in the rainbow trout (

Sperm was collected from testes and from three or four parts of the deferent ducts of 4 to 6 winter-spawning male rainbow trout, about every two weeks over a three month period (January to March). Milt volume, spermatocrit, sperm motility, 11-ketotestosterone (11-KT) and 17α-hydroxy,20β dihydroprogesterone (17,20P) levels and ionic composition were determined. Steroids and ions were also measured in blood plasma. The K+ concentrations and steroid levels in the seminal fluid from each part of the ducts did not vary significantly over the period of study. In two out of the three parts of the ducts, Na+ (parts 1 and III) Ca2+ (parts I and III) and Mg2+ (parts I and II) levels were significantly higher at the end of March than two months earlier. Motility of testicular sperm peaked (42%) in mid-February while that of sperm from ducts usually remained stable (80 to 100%) throughout the three months. Seminal fluids and blood plasma were confirmed to be isotonic (300 mmol/kg). Levels of K+, Na+, Ca2+, 11-KT and 17.20P in the plasma and seminal fluid differed significantly (respectively 0.3 vs 34 mmol, 134 vs 116 mmol, 3.4 vs 2.0 mmol, 87 vs 17 to 39 ng/ml, 11 vs 3 to 13 ng/ml), with the Na+ and steroid levels being positively correlated in both liquids. Osmolality, Cl-, Na+, K+, Mg2+ and Ca2+ concentrations remained constant along the genital tract. In contrast, spermatocrit and 11-KT and 17.20P levels decreased significantly and progressively from testis to the posterior or middle part of the ducts (respectively 97 to 49%, 39 to 17 ng/ml, 13 to 3 ng/ml) while sperm motility (percentage of motile cells and duration of motility) increased (74 to 96% and 41 to 51 s). No significant correlation was found between sperm motility and the studied physicochemical parameters of the seminal fluid.

Auteurs du document : Malgorzata Koldras, Maurice Loir, Gérard Maisse, Florence Le Gac
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