

Table of Contents

Abbreviations	v
1 Introduction.....	1
2 Chilled storage of unfertilized rainbow trout eggs	3
 2.1 Literature Review	3
2.1.1 General information about rainbow trout.....	3
2.1.2 Eggs of rainbow trout.....	4
2.1.3 Ovarian fluid	7
2.1.4 Spermatozoan biology and quality	10
2.1.5 Fertilization process	13
2.1.6 Factors affecting fertilization	15
2.1.7 Development of fertilized trout eggs.....	18
2.1.8 Preservation of gametes	24
 2.2 Materials and Methods	32
2.2.1 General procedures.....	32
2.2.2 Storage of eggs in vials (Experiments 1 to 9)	36
2.2.3 Storage of eggs in polyethylene bags (Experiments 10 to 14).....	46
 2.3 Results.....	51
2.3.1 Storage of eggs in vials (Experiments 1 to 9)	51
2.3.2 Storage of eggs in PE bags (Experiments 10 to 14).....	72
 2.4 Discussion	81
3 Application of <i>OmyP9</i> marker for genetic sex discrimination in rainbow trout.....	90
 3.1 Literature Review	90

Table of Contents

3.1.1	Importance of sex discrimination in fish.....	90
3.1.2	Sex-determination systems in fish.....	91
3.1.3	Cytogenetics of sex chromosomes in fish.....	94
3.1.4	Genetic and molecular tools for sex discrimination in fish.....	98
3.1.5	DNA analysis	104
3.2	Materials and Methods	109
3.2.1	Experimental site and fish strains.....	109
3.2.2	Collection and storage of samples.....	109
3.2.3	Consumables	111
3.2.4	DNA isolation from various tissues	111
3.2.5	Assessment of yield and purity of DNA	120
3.2.6	Gel electrophoresis and photography.....	120
3.2.7	Application of <i>OmyP9 RsaI</i> marker for sex discrimination.....	121
3.3	Results.....	123
3.3.1	DNA isolation from various tissues	123
3.3.2	DNA quality and purity.....	134
3.3.3	Application of the <i>OmyP9 RsaI</i> marker for sex discrimination	135
3.4	Discussion	138
3.4.1	DNA isolation from various tissues	138
3.4.2	DNA quality and purity.....	143
3.4.3	Application of <i>OmyP9 RsaI</i> marker for sex discrimination	143
4	Summary.....	146
5	Zusammenfassung.....	149
6	References	153
7	List of Figures.....	170
8	List of Tables	171