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Evolution of Bovine Embryos Cleavage in Co-culture of M.S.Cs Derived from Adipose Tissues Rat

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Abstract

Mesenchyme Stem cells (MSCs) are one of the widely used sources in tissue engineering and efficacy of cultural environment. In this survey, rat stem cells are used as co-culture. Owing to main obstacle of embryo culture in the lab medium, the survival of embryo in lab is low in comparison with that of normal conditions. The purpose of this research is the survey of fertilization and culture of bovine embryos in Mesenchyme Stem Cells derived from Adipose Tissue (ADMCs). Isolated ADMCs were cultured on 4-well dishes. Three days after cell culture, the bovine immature oocytes were transferred on this mono layer system and the in-vitro matured oocytes were fertilized by sperms in another MSCs free environment subsequently. Then in-vitro fertilized embryos were co-cultured with the same mono layer of ADMCs for seven days. During oocyte and embryo co-culture, the rates of maturation and cleavage were assessed. This study reveals that co-culture of embryos with Mesenchyme Stem Cells could increase the survival and cleavage of embryos significantly ($P<0.05$). The maturation rate of bovine co-cultured oocytes (%82) in comparison with that of control group (%78) has increased significantly. Also, the rate of blastocyst formation in co-cultured embryos (%33) was analytically comparable with that of control group (%26). What bolsters substantially the quality and development of embryo is co-culture systems.

Keywords: Co-culture, Mesenchyme Stem Cells, Adipose Tissues, Bovine, Embryos.

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A Look at Assisted Reproductive Technology by Means of Freezing

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Abstract

Infertility has long been considered as one of the important medical issues, for which many therapeutic strategies have been acquired by the passage of time and thanks to advanced knowledge and technology. In cases where there are no natural fertility methods, assisted reproductive technologies are used. Researchers believe that the most common methods of fertility preservation, such as : Ovarian cortex, oocyte and embryo cryopreservation, depend on several parameters, including: the type of problem and treatment, the infertility cause as well as the patient's age and marital status. Nowadays, with the advancements of medical sciences, infertile women or women with high risk of diseases such as cancer or those women who for various reasons postponed childbearing age can maintain their fertility using cryopreservation methods including egg, embryo and ovarian cortex freezing. Using these methods will be different based on the cause of infertility, infertile women conditions or specific diseases or cancer. During the recent years, vitrification techniques have been introduced as a clinical practice which is constantly reviewed, compared and changed.

Keywords: Infertility, Freezing, Embryo, Oocyte.

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An Overview of the Most Important Mechanisms and Systems of Targeted Drug Delivery

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Abstract

Drug delivery is one of the most important and most complex pharmaceutical branches that, nowadays, is expanding dramatically, thanks to use of other sciences. These improvements, especially in the field of drug delivery mechanisms and systems is very effective and useful. In this paper, targeted drug mechanisms such as Physical targeting, by progressing on the application of magnetic fields, ultrasound and electric fields are discussed. Passive targeting with its application on treatment of tumor tissue is explained. Active targeting with consideration of its Specificities is explained. Also, delivery systems for drug targeting like Nano-scale Carriers including Nano-liposomes, lipid nanoparticles, solid lipid nanoparticles and dendrimers are explained. In the end, Targeted Pro-drugs and Cellular Carriers and their progress as two other examples of drug delivery systems are explained.

Keywords: Drug Targeting Mechanisms, Drug Targeting Systems, Physical Targeting, Passive Targeting, Active Targeting, Nano-scale Carriers, Targeted Pro-drugs, Cellular Carriers

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Different Methods using GnRHa on Out-of-season Reproductive Efficiency in Male Goldfish (Carassius auratus, Linnaeus 1758)

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Abstract

The present research aims to evaluate the effects of different methods of LHRHa implants and injections on some biological properties of semen including sperm density, spermatocyte percentage, pH and duration of sperm motility during spermiogenesis, sperm volume during 21 days after treatment and testosterone hormone changes in the days after implant and injection (Spermiogenesis, 7, 14 and 21) after the treatment in male goldfish brood stock in non-reproduction season. Fish were included in 4 treatments (injection of normal saline 0.7%, EVAc 20 mg / kg body weight LHRHa with 40 micrograms / kg body weight Metoclopramide, cholesterol pellets containing 20 micrograms / kg body weight LHRHa with 40 mg / kg body weight Metoclopramide and 100 mg / kg LHRH with 40 mg / kg body weight Metoclopramide. Sperm did not differ significantly between treatments (P ≥0.05). Highest spermatocyte percentage was found in treatments EVAc and LHRHa (P ≥0.05). EVAc implants significantly increased sperm volume compared with other treatments during the 21 days after treatment (P ≥0.05). Mobility period in different treatments of male fish brood stock differed significantly (P ≥0.05), so mobility period in treatment EVAc mobility stood higher than other treatments. PH of different treatments with the control group (Physiology serum injection) showed significant difference, so the lowest rate was observed in the control group (P ≥0.05). Changes in testosterone hormone showed that its rate in Spermiogenesis in EVAc and LHRHa injection treatments had significant difference compared to other treatments (P≥0.05), and in the days 7, 14 and 21 days after treatment amount of this hormone gradually decreased in goldfish male serum. It can be concluded that application of hormone LHRHa in EVAc method showed significant impact on semen constituents, spermiogenesis and increased testosterone in during spermiogenesis in off-season reproduction of goldfish.

Keywords: Goldfish, EVAc**, C**holesterol Pellets, Sperm Parameters, Testosterone

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Effects of the Prebiotic Inulin on Functional Reproduction, Gonad Development, Fecundity and Sex Ratio in Danio rerio

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Abstract

The use of probiotics and prebiotics for increasing the growth and resistance against disease are well documented in aquaculture, but work on the effects of probiotics and prebiotics on the reproductive performance of fish, especially on ornamental fish, faces a lack. We conducted a study to determine the effects of probiotic on gonad development, reproductive performance of *Danio rerio.* In this study, a diet based on a control diet (T0) and three experimental diets consisted of three levels of inulin: 1 (T1), 2 (T2) and 3 (T3) and these treatments were done with three replications. The juveniles were fed experimental diets for eight weeks (until adulthood: average weight: 1.67 gr, average length: 5.4 cm). In this experiment, reproductive performance in terms of egg diameter, absolute fecundity, sex ratio, gonadosomatic index, number of larvae, survival of juveniles and gonad development were examined. The results showed that probiotic treatments, reproductive performance including egg diameter, survival larvae, absolute fecundity, gonadosomatic Index, length and weight of larvae in treatment T2 and T3 were significantly higher than other treatments ($P < 0.05$). Also, the results showed that the prebiotic inulin does not have a significant impact on the sex ratio in zebrafish ($P > 0.05$). According to the histology of the gonads, the use of dietary inulin accelerates the process of gonad development in zebrafish.

Keywords: Prebiotic Inulin, Reproduction Function, Sex Ratio, *Danio rerio*

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Morphometric Relation of Genus Colutea L. (Fabaceae) in Iran

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Abstract

A multivariate statistical analysis was performed on morphological characters of *Colutea* L. species in Iran. Totally, 20 qualitative and quantitative morphological characters were studied. Statistical analyses were done by SPSS ver. 18.0. Also, different methods of multivariate statistical survey of cluster analysis (Ward) and ordination (PCA) were used. Morphological studies and differential characteristics are obtained in the principal component analysis, two components were introduced in the first component, shape and length of the seeds, traits and positive coefficient. Results of cluster analysis were confirmed by results principal components analysis. Cluster analysis was confirmed by principal component analysis and good variety of different traits to species based on similarities and differences have been separated and morphological traits can identify and classify species of this genus in the systematic application.

Keywords: Analysis, Cluster Analysis, Fabaceae Family, Colutea, Grouping, Principal Component

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