

Effects of human chorionic gonadotropin on spermatogonial stem cell colony formation and differentiation after in vitro Coculture with Sertoli cells

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Spermatogenesis is a complex developmental process that originates from spermatogonia stem cell. This process consists of sequential, highly organized steps of cell proliferation and differentiation resulting in the generation of functional spermatozoa. Therefore, the aim of the present study was to determine the effects of human chorionic gonadotropin (hCG) on spermatogonial stem cell colony formation and differentiation after in vitro Coculture with Sertoli cells. In this experimental study, Sertoli and spermatogonial cells were isolated from 3- to 5-month-old calves. Co-cultured Sertoli and spermatogonial cells were treated with hCG in treatment groups before colony assay with 2, 5 and 10 IU/ml culture medium. Vimentin and oct-4 immunohistochemical staining were used for Sertoli and spermatogonial stem cell colony detection, respectively. The present study showed that hCG increase both colony diameter and colony number. hCG can induce both proliferative pathway and differentiation process in SSCs Coculture with Sertoli cells.

Keywords: *Coculture, hCG, Sertoli cells, Spermatogonia stem cell*

The effect *Vitex Agnus-Castus* on serum concentration of cortisol, progesterone and luteinizing hormone in dairy cows

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In this study a 50 ml hydroalcoholic extract of the plant, *Vitex-agnus* prescribed to cyclic Holstein cows orally, and its effects on serum Cortisol, Progesterone and Luteinizing hormone concentrations were assessed. Cows divided into control (n=7) and treatment (n=7) groups. After 21 days' prescription of the extract in treatment group, both groups synchronized by two intra muscular injection of PGF2 α in 11 days apart. Prescription of herbal extract of *Vitex agnus-castus* in the treatment group continued till to end of synchronized cycle. During this estrous cycle blood samples collected and ovaries and uterus of cows were examined ultrasonographically. After 53 days' treatment, progesterone, LH and cortisol concentrations of serums that were taken in days, 5, 9, 13 and 18 of estrous cycle measured by ELISA kit.

Statistical analyses were done by SPSS. An analysis of repeated measures with 95% Confidence Interval was carried out by (GLM) procedure for times (days) trends measures. An independent t test was done for comparison of the data. The data of treatment group before and after treatment was analysed by paired t test. Results showed that *Vitex-agnus* increases serum progesterone concentration versus before treatment and control group (P>0.05). The cortisol concentration after treatment decreased but it was not significant. The LH concentration in treatment group only in days 13 increased (not significantly). These results show that the herbal extract probably, have positive effects on progesterone, LH blood concentration increase and cortisol blood concentration decrease in Holstein cows.

Keywords: *Vitex Agnus-Castus*, Progesterone, Cortisol, Luteinizing hormone, Dairy cows

Protective effects of Black cumin (*Nigella sativa* Linn.) extract against cisplatin hepatotoxicity in rats

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Cisplatin as an important anti-cancer drug is a potent hepatotoxicant. The aim of the present study was to evaluate the protective effect of ethanolic extract of Black cumin (*Nigella sativa* Linn.) against cisplatin-induced hepatotoxicity in the rats. 40 male Wistar rats were randomly allocated into 4 groups. Group 1 was used as control; groups 2 and 4 were orally treated with ethanolic extract of Black cumin (250 mg/kg) for 15 consecutive days. Groups 3 and 4 received a single intraperitoneal dose of cisplatin (7.5 mg/kg) on the 10th day of the experiment. At the end of experiment, sermic levels of aspartate and alanine transaminases, lactate dehydrogenase and total bilirubin, albumin and total proteins were assessed. Malondialdehyde, reduced glutathione and activities of superoxide dismutase, catalase, glutathione peroxidase and glutathione reductase were assayed in liver homogenates. For histopathological evaluation, tissue samples were obtained from the livers and histologic sections were prepared by routine H&E staining method. Finally, the biochemical findings were matched with histopathological verification. In group 4, ethanolic extract of Black cumin significantly decreased the elevated levels of serum biomarkers of hepatic injury and total bilirubin, and significantly increased the reduced levels of serum albumin and total proteins. In this group, ethanolic extract of Black cumin significantly decreased the lipid peroxidation and elevated the decreased values of hepatic antioxidants. Histopathologically, the changes were in agreement with biochemical findings. Treatment with Black cumin extract considerably inhibited the pathological changes in the rat liver tissue and only visible damage was slight cytoplasmic vacuolation of hepatocytes especially around the central vein. The results of this study showed that, ethanolic extract of Black cumin, because of its anti-oxidant potential, exerts a protective effect against cisplatin induced hepatotoxicity in rats.

Keywords: *Nigella sativa* Linn., Cisplatin, Biochemical parameters, Antioxidant, Histopathology.

Effect of hydro-alcoholic extract of Pistacia Vera L. on the severity of hypercholesterolemia lesions in rabbit aorta

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Atherosclerosis is the leading cause of cardiovascular diseases. The aim of this study is evaluating the effect of Pistacia Vera L. extract of Pistacia Vera L. on the severity of hypercholesterolemia lesions in rabbit aorta. For this purpose, 25 adult female rabbits passed adaptation period and they have been divided in to 5 treatment groups of 5 rabbits each, included: scheme, positive control 1, positive control 2, treatment and negative control. Scheme group was fed with normal diet. Positive control 1 and 2 were fed by corn oil and cholesterol as the same amount of treatment respectively. Treatment was fed with Pistachios extract with the amount of 1000 mg/kg. Furthermore, corn oil with the amount of 1 ml/kg with adding 1 percent cholesterol of total consuming food weight were administrated to treatment by gavage. Negative control was prescribed with 1000 mg/kg oral administration of Pistachios. In this study, no change in aortic tissue was observed in the scheme group. In the positive control 1 (receiving corn oil), there was no precipitation. The treatment compared with negative control (receiving cholesterol) indicated less amount of fatty deposits in aortic tissue. In the negative control (receiving pistachio extract) There was also no precipitation. This study indicates that pistachio extract can help in reduction of atherosclerosis side effects and reducing fat deposits in aortic tissue layer intima and media in hypercholesterolemic rabbits.

Keywords: Pistachio, Aorta t, Hypercholesterolemia, Rabbit

Histology and histomorphometric study of selected immune organs in twenty day-old Chukar Partridge

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Considering the important role of lymphatic tissues in Birds' health and the scarce knowledge about histological features of partridge as an industrial species in Iran, the present study investigates histological parameters of lymphatic organs of partridge. Thirty 20-days-old male partridges that were reared under similar conditions were used. Data were presented as Mean±SD. Samples from Thymus, thymus, bursa of Fabricius, spleen, cecal tonsils and pylorus tonsils were collected. After fixation and routine histological laboratory methods, 6µm-thick transverse sections were made. The sections were stained with Haematoxylin and eosin and studied under light microscope, also histomorphometric parameters were measured by a linear graticule. Cecal tonsil had a structure consisting of follicular units with a fossula within each follicular unit. The average height of the follicular unit was 1.14±0.11mm, the follicular unit width was 0.31±0.06mm. The bursa of Fabricius was consisting of long thick mucosal folds (plicae). Plicae height was 2.99±0.30mm, the follicular width was 0.49±0.02mm. Thymus has incompletely separated lobules that diameters of the lobules was 0.60±0.07mm. The red pulp of spleen was in the middle of the white pulp. The white pulp thickness was 0.20±0.00mm. The pyloric tonsil has sub mucosal follicles with 0.24 ± 0.44 mm width. Conclusion: In conclusion the present study shows that lymphatic organs of partridges have similarity with that of chickens although with regard to histomorphometric data the lymphatic structures are more extensive in partridges which may describe relatively high immunologic competency in this species.

Keywords: *Partridge Chukar, Histology, Histomorphometry, Lymphatic organs*

Study on effects of selenium on histopathology and histometrical parameters in testis of normal and experimental varicocele rats

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Negative effects of oxidative stress on serum, semen and testicular tissue have shown in patients with varicocele or in animal models. This study investigated the effects of sodium selenite on histological and histometrical parameters in testis of normal and varicocele-induced male Wistar rats. Forty-four rats were divided randomly in 11 groups: control group (1 ml/kg of saline intraperitoneally), sham-operated control group (only surgery without varicocele, 1 ml/kg of saline intraperitoneally, experimental varicocele groups (sodium selenite at doses 0.05, 0.1, 0.2, and 0.4 mg/kg, intraperitoneally) and normal experimental groups (sodium selenite at doses 0.05, 0.1, 0.2, and 0.4 mg/kg, intraperitoneally). Two months after surgery using Turner method, varicocele was induced in rats. Then, sodium selenite was administered continuously for 60 days. Testis tissue samples were collected for histological and histometrical studies. Sodium selenite caused a significant increase in thickness of epithelium of seminiferous tubules compared to varicocele control group ($P<0.01$). Tubular differentiation index (TDI) and spermiogenesis index (SI) of seminiferous tubules showed an increase in sodium selenite groups compared to normal control group. TDI and SI of seminiferous tubules showed a significant decrease in varicocele control group compared to normal control group ($P<0.05$). Sodium selenite caused a significant increase in number of leydig cells in varicocelized rats, compared to varicocele control group ($P<0.01$). Taken together, the results of this study suggest that selenium treatment may have beneficial effect on the testis tissue of varicocelized rats.

Keywords: *Sodium selenite, Varicocele, Testis, Rat*

Effects of adding royal jelly to Tris-egg yolk extender on Afshari ram sperm parameters after liquid storage of semen

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The present study was conducted to evaluate the protective effects of royal jelly in Tris based extender on ram sperm parameters including motility, viability, morphology and plasma membrane integrity during 7 days liquid storage. 64 semen samples were collected with artificial vagina from 4 rams. After initial assessments, semen samples were mixed and then were diluted with Tris based extender having 0 (control), %1, %3 and %5 royal jelly. Motility was assessed with CASA system. Morphology and viability were assessed with Eosin-Negrosin staining method and plasma membrane integrity was assessed with HOST method. Diluted semen samples were kept in 37° for 1 hour and 4° C for 7 days. The results showed that motility percentage (51.25 ± 2.86) in %3 royal jelly supplemented group was significantly higher than other treatment groups after 7 days' liquid storage of semen ($P < 0.05$). The percentage of sperm cells with functional plasma membrane (46.53 ± 2.96) in %3 royal jelly supplemented group was significantly higher than control group ($P < 0.05$). The percentage of live sperm cells in %3 (56.96 ± 3.37) and in 1% (54.68 ± 2.83) royal jelly supplemented groups were higher than control group ($P < 0.05$). In conclusion, the results of present study showed that supplementation of %3 royal jelly to Tris based extender improves ram sperm parameters after 7 days' liquid storage of semen.

Key words: *Ram, Semen, Royal jelly, Sperm*