

MOLECULAR IDENTIFICATION, ANTI BIOTIC RESISTANCE PROFILE OF SHIGA TOXIN-PRODUCING ESCHERICHIA COLI (STEC) AND ANTIBACTERIAL ACTIVITY OF ZATARIA MULTIFLORA (BOISS) AND CARUM COPTICUM ESSENTIAL OIL AGAINST THEM

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Abstract

Background & Aims: Shiga toxin-producing *Escherichia coli* (STEC), has appeared universally as an important zoonotic food-borne pathogen. Infection with STEC in human has different clinical picture, from mild secretory diarrhea, to hemorrhagic colitis (HC) which can lead to life threatening sequelae like haemolytic uremic syndrome. The purpose of this study was to determine antibiotic resistance profile of shiga toxin-producing *E. coli* (STEC), molecular identification, and antibacterial activity of *Zataria multiflora* bioass and *Carum copticum* essential oil against them.

Materials & Methods: In this study, two hundred fecal samples were taken from Buffalo in West Azarbaijan province and examined for Shiga Toxin-producing *Escherichia coli* by PCR. Antimicrobial susceptibility of the isolates was considered by the disk diffusion method.

Results: The results showed that 13 (8/6 %) of isolates harbored the Shiga toxin genes, containing three (23 %) was positive for stx₁ and stx₂, 5 (38%) was positively identified for stx₁, and 5 (38%) was positive for stx₂. Multi-drug resistance was detected in all STEC strains, all STEC were resistant to Ampicillin, neomycin, streptomycin, erythromycin, kanamycin, amoxicillin. Tobramycin, Cefotaxime and tetracycline were most effective and all STEC isolates were susceptible to them.

Conclusion: According to the results buffalo has important role as a reservoir for STEC in Iran. On the other hand, the isolates showed a high rate of resistance to anti-microbial agents and multi-drug resistance was remarkably common. Finally, the antibacterial activity of plant essential oil would warrant further studies on the clinical applications.

Keywords: Shiga toxin-producing *Escherichia coli*, Antibiotic resistance profile, *Zataria multiflora* bioass, *Carum copticum*

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PREDICTIVE VALUE OF COLOR DOPPLER SONOGRAPHY IN ASSESSMENT OF SUCCESSFULNESS OF NONSURGICAL REDUCTION OF INTESTINAL INTUSSUSCEPTIONS

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Abstract

Background & Aims: Intussusception is one of the most common causes of bowel obstruction in young children; ultrasonography (US) is considered a reliable method for diagnosis. The primary treatment is hydrostatic radiologic reduction, but this should never be used in children with necrotic or perforated bowel. Clinical and radiologic prediction of intestinal necrosis is difficult. Color Doppler (CD) US appears to be a useful method to predict the viability of the bowel and the reducibility of the intussusception. The purpose of this study was to assess the diagnostic usefulness of ultrasonography in intussusception in children and determine whether color doppler sonography can predict bowel viability and reducibility.

Materials & Methods: US was used to examine 75 children in whom the presence of intussusception was clinically suspected. CDS was performed in 75 patients with proved intussusception with US.

Results: CDS indicated blood flow in 70 of 75 cases of intussusception; nonsurgical reduction was achieved in 46 (61.4%) of 75 cases and 29 patients (38.6%) underwent surgical operation. Four of five patients who had no color doppler signal underwent segmental resection. Three of 24 patients who had color doppler signal underwent segmental resection. The difference in resection rates based on blood flow was statistically significant ($p=0.007$).

Conclusion: US is sensitive and specific in the diagnosis of intussusception, and CDS is a promising predictor of bowel viability.

Keywords: Intussusception, Sonography, Color Doppler Sonography, Nonsurgical Reduction

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THE EFFECT OF BISPECTRAL INDEX MONITORING ON PROPOFOL CONSUMPTION IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFT

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Abstract

Background & Aims: This study was aimed to investigate whether BIS monitoring can improve recovery from propofol anesthesia and decrease the propofol requirement or no.

Materials & Methods: In a randomized, prospective design, 20 patients received propofol, at target dose 100 µg/kg/min and intraoperative anesthetic management was blinded to BIS values, whereas in 20 patients propofol was titrated to maintain a BIS value of 40-60. Mean arterial pressure and bispectral index were recorded at various time intervals. Monitoring was equal in all cases. Mild hypothermic CPB was applied in all patients. Statistical analysis used 2-tailed t test, and chi² analysis.

Results: Patient demographic data, operation performed, hypothermia application, times of anesthesia, duration of operation, and CPB were similar in the both groups. None of the patients reported awareness during a standardized interview. The total dose of propofol was lower in the study group but there were no statistical differences (1.95 mg/Kg/hr in study vs. 2.59 mg/kg/hr in control group and p>0.05) and there was no significant difference in ex-tubation time among two groups.

Conclusion: The BIS is useful for monitoring the depth of anesthesia but the use of BIS cannot be valuable in guiding the administration of propofol intraoperatively for coronary artery bypass graft requiring cardiopulmonary bypass. Further investigations with other type of surgeries and shorter time operations are recommended.

Keywords: Bispectral index monitoring, Propofol consumption, Coronary artery bypass graft

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AN INVESTIGATION OF ULTRASTRUCTURAL CHANGES IN CELLS OF SEMINIFEROUS TUBULES OF TESTES AND ALTERATIONS IN GONADOTROPIC - GONADAL HORMONES OF ADULT MALE EXPERIMENTALLY INDUCED DIABETIC RATS

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Abstract

Background & Aims: Increase of blood glucose levels leads to structural and functional changes in reproductive system. This investigation was conducted to evaluate the effects of diabetes on the structure and function of testicular tissue focusing on the ultrastructure of the epithelium of seminiferous tubules.

Materials & Methods: Diabetes was induced in adult male rats by single intraperitoneal injection of streptozotocin. Measurement of body and testicular weight, hormonal analysis of pituitary gonadotropins and testicular steroids, with ultrastructural study of seminiferous tubules was made at the end of 70 days of study.

Results: In diabetic rats, the body and testicular weights, the levels of 17- β estradiol, progesterone, FSH and LH significantly ($p < 0.05$) reduced in comparison to the control rats. The blood plasma level of testosterone reduced in diabetic rats but was not significant ($p > 0.05$). Ultrastructural study showed the mitochondrial change, reduction of smooth endoplasmic reticulum and presence of lipid droplets in Sertoli cells with disturbance of cell-cell junction of spermatogonia cells in seminiferous tubules of diabetic rats.

Conclusion: The results of this study proved that the increase of blood glucose levels can influence the normal spermatogenesis and fertility through the alteration of the hypophyseal and testicular hormonal levels and ultrastructural changes of testicular tissue.

Keywords: Diabetes, Ultrastructure, Testis, Spermatogenesis, Seminiferous tubules

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THE EFFECTS OF LACTOBACILLUS RHAMNOSUS LMG18243 ON GROWTH OF BREAST CANCER IN INBRED BALB/C MICE

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Abstract

Background & Aims: Breast cancer is one of major invasive women cancers. Probiotics are nonpathogenic micro-organisms that have immuno-stimulatory effects. Probiotics can stimulate the systemic immunity beside gut immunity against cancer. This study aimed to evaluate the effects of *Lactobacillus rhamnosus* LMG18243 on breast cancer development in inbred Balb/C mice.

Materials & Methods: Ten Balb/C mice (4-6 weeks age, 18-20 gr) were entered to study and divided to control and probiotic groups after tumor verification. The probiotic group received bacteria (3×10^8 CFU/day) one week before tumorization by gastric intubation. The probiotic administration continued additional 27 days with 3 days interval, and 7 days postoperative delay. The control group received PBS as the same protocol and schedule.

Results: The data showed that the tumor growth in probiotic group was lower than the control group significantly. The histopathologic data showed that the mitotic cells in tumor decreased and necrosis processes increased significantly in probiotic group. The significant increase in DTH of probiotic group indicated that the cell mediated immune system was stimulated in probiotic group.

Conclusion: The *Lactobacillus rhamnosus* as a probiotic can potentiate the immune system against tumor and can be used as a good adjuvant in cancer therapy. It can stimulate Th1 immune memory cells.

Keywords: Probiotic, *Lactobacillus rhamnosus*, Balb/C mice, Breast cancer

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HYPOCHONDRIACAL THOUGHT IN PATIENTS WITH ANXIETY DISORDERS AND MAJOR DEPRESSION

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Abstract

Backgrounds & Aims: The purpose of this study was to comparison degree of hypochondriacal thought in patients with anxiety disorders and depression.

Materials & Methods: In this study, 156 patients with anxiety disorders and depression were selected by convenience sampling method. Illness attitude scales (IAS) was administrated to them. Data analysis was done using covariance and post hoc test.

Results: The findings indicated that whereas patient with generalized anxiety disorder, obsessive compulsive disorder and depression disorder experience hypochondriacal thought but these symptoms are significantly less pronounced than among those with panic disorder.

Conclusion: The finding discussed in this article helps to formulate a more precise conceptualization and treatment planning of panic disorder and other anxiety disorders.

Keywords: Hypochondriasis, Anxiety, Depression

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EFFECT OF INTRA-HIPPOCAMPAL MICROINJECTION OF THIOPERAMIDE AND HISTAMINE ON THE OROFACIAL TONIC PAIN IN RATS

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Abstract

Background & Aims: Brain histamine, through H3 receptor, has an important role in central perception of pain. The present study investigated the effects of intra-hippocampal microinjection of histamine and thioperamide (a histamine H3 antagonist) on tonic pain in orofacial region of rats.

Materials & Methods: In 72 male Wistar rats two guide cannulae were implanted into the dorsal hippocampus bilaterally. Orofacial region tonic pain was induced by subcutaneous injection of formalin (50 µl, %1) into the upper lip, and rubbing the injected site (face rubbing) was recorded in 3 min blocks for 45 min.

Results: Subcutaneous injection of formalin in the upper lip produced a marked biphasic (first phase: 0-3 min and second phase: 15-33 min) pain response. The intensity of pain in the first and second phases was significantly ($P<0.05$) suppressed with intra-hippocampal injection of histamine (1 and 2 µg) and thioperamide (2.5 and 5 µg). Pretreatment with thioperamide before histamine enhanced the antinociceptive effect of histamine.

Conclusion: The results showed that intra-hippocampal injection of histamine and thioperamide suppressed the first and the second phases of orofacial tonic pain. Blockade of histamine H3 receptor with thioperamide enhanced the antinociceptive effect of histamine.

Keywords: Hippocampus, Histamine, Thioperamide, Tonic pain, Orofacial region, Rat

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STUDY ON BRAIN ATROPHY AND COGNITIVE IMPAIRMENT IN MS PATIENTS DURING FIRST TWO YEARS OF DISEASE ONSET

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Abstract

Back ground & Aims: Multiple Sclerosis is an inflammatory demyelinating process of central nervous system. The purpose of this study was assessment of brain atrophy and cognitive dysfunction during the first two years of disease evolution.

Patients and Methods: In a case-control study, 50 cases as patients and 50 normal ones as the control group were included. Twelve patients were male (24%) and 38 were female (76%). The age of cases and controls ones was 15-35. The cases with documented MS of relapsing-remitting type passing the first 2 years of the disease were followed for about 15 months with EDSS and MMSE. MRI films were examined for ICR and then were compared to 50 MRI films of the controls to determine the normal ICR.

Results: The mean of ICR was 0.107 ± 0.23 in the case group and 0.099 ± 0.21 in the control group that showed no evidence of brain atrophy in patients during the first two years of the disease ($P=0.084$).

The relation between MMSE and EDSS of patients was reverse i.e. when MMSE score increased, there was a decrease in the score of EDSS and vice versa.

Conclusion: In our study, occurrence of brain atrophy during the first two years of RRMS was not observed. However, there was cognitive dysfunction in 46% of patient that presented early onset of cognitive problems in these patients.

Keywords: Multiple Sclerosis, Corpus Callosum, Brain Atrophy, Cognitive dysfunction

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THE EFFECT OF USING PACKED GAUZE IN THE EACH BUCCAL CAVITY OF EDENTULOUS PATIENTS ON FACILITY OF BAG MASK VENTILATION AFTER REMOVING DENTURES

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Abstract

Back ground & Aims: In the edentulous patients some authors suggest to leave dentures in when ventilating with bag-mask. In this research, we suggest a more efficient method.

Materials & Methods: In the prospective blind randomized clinical trial we included 200 patients (age $\geq$ 55) into two groups. After induction of anesthesia in all groups, in the group I, we placed folded gauze in each buccal cavity, and then placed an oral airway. In group II, we placed only an oral airway after removing dentures. Then both of groups were ventilated with face mask and bag and successful bag-mask ventilation was assessed in each group. Success rates were recorded and compared using independent T-Test in SPSS 16.

Results: Successful bag-mask ventilation was achieved in 41 of 100 (41%) of group II compared with 91 of 100(91%) in group I. (odds ratio 0.06, 95% CI= 0.03–0.15, P= 0.0001).

Conclusion: Placing the packed gauze in buccal cavity after induction of anesthesia improves bag mask ventilation significantly.

Keywords: Bag-mask ventilation, End Tidal CO₂, Edentulism, Packed gauze

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THE IMPACT OF OFFSPRING'S GENDER AND AGE ON MATERNAL LEPTIN BLOOD LEVEL; AS WELL AS THE EFFECT OF MOTHER PHYSICAL ACTIVITY AND CONTRACEPTIVE METHODS ON SPECIFIC GRAVITY OF MOTHER'S MILK

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Abstract

Background & Aims: Several studies indicate that feeding with breast milk is associated with reduction in risk of obesity later in life. Children fed with breast milk have better regulation of nutrient intake in adulthood. The aim of this study was to investigate the impact of offspring's gender and age on maternal Leptin blood levels and effects of mothers' physical activity and contraceptive methods on specific gravity of breast milk.

Materials & Methods: In this study, 115 mothers referring to health centers of Urmia were selected randomly. A questioner was filled out for each mother asking about sex, age, weight of offspring's as well as information about method of delivery and contraception of mother. Five ml of breast milk and blood sample were taken from each mother and were used to measure the Specific Gravity (SG) and blood Leptin levels (BLL), respectively.

Results: Though changes in BLL significantly differed according to offspring's age, differences in BLL were not significant according to offspring's gender. Physical activity of mother significantly increased SG of mother's milk. Differences in SG of maternal milk were significant based on contraceptive technique. There was no significant correlation between BLL and SG of milk in mothers.

Conclusion: Maternal BLL can change with offspring's age. Since Leptin is a major regulator of energy intake, children fed with breast milk might grow up and gain weight better than babies fed with formula. Also, that daily maternal activity in normal life affects quantity and quality of breast milk.

Keywords: Blood Leptin, Specific gravity of breast milk, Daily maternal activity, Contraceptives

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COMPARISON OF BRAIN POSTERIOR AREAS' WAVE ACTIVITIES IN SCHIZOPHRENIC PATIENTS WITH HEALTHY PEOPLE

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Abstract

Background & Aims: Schizophrenia is characterized by a broad range of unusual behaviors that cause profound disruption in the lives of the patients suffering from the condition. individuals with schizophrenia show dysfunction within brain lobes. The aim of this research was to compare brain posterior areas' wave activities in the schizophrenic patient with a healthy group.

Materials & Methods: In this research 38 schizophrenic patients and 38 healthy individuals were studied. The results of Scale for Assessment of Negative Symptoms (SANS) and Scale for Assessment of Positive Symptoms (SAPS) showed that 18 patients had negative and 20 had positive symptoms. Q-EEGs of patients and control groups were obtained from six areas of parietal and occipital lobes and the results were compared with Hotelling Trace criterion.

Results: The findings indicated that except 6 variables, in 18 related variables to parietal and occipital lobes there were significant differences. The means of two groups signified that in schizophrenic patients delta waves of these two lobes increased and theta and alpha waves decreased. Also in patients, beta waves of these two lobes in the left hemisphere decreased and in the right hemisphere increased.

Conclusion: The decrease of beta waves in left hemisphere and its increase in right hemisphere in these lobes in schizophrenic patients were consistent with previous studies that say the activities of the right hemisphere in schizophrenic patients were higher than the left hemisphere.

Keywords: Schizophrenia, Q-EEG, Brain waves, Parietal lobe, Occipital lobe

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EFFECT OF AEROBIC AND STRENGTHENING EXERCISES ON BALANCE, MUSCLE STRENGTH AND BONE DENSITY IN POST MENOPAUSAL WOMEN WITH PRIMARY OSTEOPENIA AND OSTEOPOROSIS

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Abstract

Background & Aims: Osteoporosis is the most common metabolic bone disease. The aim of this study was to investigate the effects of exercise therapy on balance, muscle strength, bone density and quality of life in women with primary osteopenia and osteoporosis and to compare two types of aerobic and strengthening exercises on mentioned indexes.

Materials & Methods: In this clinical trial, 90 postmenopausal women with osteoporosis referring to physical medicine clinic during 15 months were randomized into three groups of 30 people. Drug therapy began in all three groups. Quadriceps, hip abductor and extensors of trunk muscles strength were determined. Bone density of lumbar and femoral areas was measured by DEXA method. SF36 questionnaire of quality of life was completed by patients. In the second and third groups, aerobic and strengthening exercises were conducted for 6 months.

Results: Although average BMD in an intra-group comparison had significantly increased in all three groups, there was no significant difference in the mean of BMD increase in lumbar and femoral areas (0.29 ± 0.19 , 0.26 ± 0.25 , 0.26 ± 0.23 , $P=0.834$). Reduction of fall risk, improvement of postural stability and increased muscles strength were observed in two exercise groups compared to the group without exercise ($P<0.001$). There was a significant increase in improving quality of life of patients based on SF36 questionnaire.

Conclusion: Performing a 6-month exercise program in post menopause women increases muscle strength, maintains balance and improves quality of life in this group of patients compared to postmenopausal women under drug therapy only. A subtle increase in bone density was observed among studied groups without any distinct difference; however, its effects seem to be stronger by continuous exercise program.

Keywords: Osteoporosis, Postmenopausal women, Bone density, Aerobic exercises, Strengthening exercises

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