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Preservation of Medicinal Plant Seeds of *Silybum marianum* L. under Cryopreservation (Liquid Nitrogen)

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Abstract

Plants like living beings are at an alarming speed exposed to genetic erosion and extinction. Awareness of erosion plant diversity has further necessitated preservation various species and prevention from genetic erosion. Cryopreservation technology, preserving at -196c degrees (liquid nitrogen), is one of the most suitable and safest tools for preserving germ plasm of plant species including seed, tissues and plant cells. At this cold temperature, metabolic processes and seed or plant organ physiological activities almost stop and plant organ and seed is able to survive at unlimited intervals. During this research, glycerol pretreatments of 30%, plant Vitrification Solution 2 and Desiccation were used in order to preserve medicinal plant seeds of *Silybum marianum* from Asteraceae family under cryopreservation. All treatments were taken out of liquid nitrogen after one week; were melted in warm water bathroom at 42 degrees for two minutes; next, they were cleansed three times for removing the cold protection substances and they underwent sterile distillation. Seeds were placed into petri dishes on filter paper and were transferred to germinator with 24 centigrade degrees and light regime of 16.8 hours. Percentage of germination and length of growing organs were measured and statistically analyzed under lab investigations. The results showed that plant seeds had preserved power of survival in liquid nitrogen in all three treatments and most percentage of survival (93%) was observed in desiccation treatment (70%) compared to control group. Our results match those of other scientists in survival of seeds in liquid nitrogen (Zhai et al., 2003; Dixit et al., 2003; Sanchez et al., 2008,...). Resistance to cold after desiccation and remaining at immobility is associated with presence of special proteins like delayed embryogenesis proteins, thermal shock proteins and seed preservation proteins and there is close relationship between certain size of these proteins and seed shelf life (Rajjou & Debeaujon, 2008). Our results match those of the scientists in survival of seeds in liquid nitrogen (Zhai et al., 2003; Dixit et al., 2003; Sanchez et al., 2008,...). Therefore, treatment of seed humidity reduction (Desiccation) is a simpler method with the utmost output in terms of easiness and needlessness of chemical substances. It is suggested that this be used as a backup version and certain substitute for longtime preservation of *Silybum marianum* seeds and other orthodox seeds (at low humidity percentage) in the centers where vegetative germ plasm reserves are kept.

Keywords: Cryopreservation, Glycerol 30%, Liquid Nitrogen, PVS2, *Silybum marianum*, Vitrification Solution.

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Evaluation of Anti-fungus Effects of Oily Essence of *Alliumstadium* on the *Candida albicans*, *Candida Glabrata* and *Candida Tropicalis* under Lab Conditions

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Abstract

Candida species has widespread pathogenic in animal and human hosts. They cause 88% of hospital fungal infections and are the fourth cause of blood infections. *Alliumstadium* contains sulfur and fructosan. Sulfur compounds are taken from amino acid called alanine and these compounds existing in *Alliumstadium* are divided into two major groups of sulfur and non-sulfur compounds. In this study, standard samples underwent culture on sabouraud dextrose agar (Merck) and chrome agar candida. The extracted essence is being preserved into lidded sterile dish (regarding phase of escaping) in 4c degrees. Clevenger apparatus was applied for hydro distillation essence extraction method. Non-growth areola thickness and ANOVA one-sided variance analysis test in different essence densities were calculated. In disc diffusion method, 250microgram density showed that *candida albicans* has more sensitivity. *Candida glabrata* compared to *tropicalis* had a meaningful difference in 1000 microgram density. Study of MIC result showed that *candida albicans* fungus has the least MIC rate with MIC=0.4, thus is the most sensitive fungus compared to *Alliumstadium* essence. *Candida* is the most important pathogenic cause in oral candidiasis; therefore, it is particularly important to control infections of *candida albicans* and *glabrata* along with quick diagnosis and prevention from candidiasis. For careful treatment, it seems necessary to determine species level of *candida* and genotypic analysis of clinical isolates in order to assess candidiasis and special prevention in hospitalized patients.

Keywords: *Alliumstadium* Oily Essence, *Candida Albicans*, *Candida Glabrata*, *Candida Tropicalis*.

Study of Hydroalcoholic Extract Effect of *Trachyspermum Copticum* Seed on Stress Behavior in Mature Male Rats

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Abstract

Stress is regarded as one of the psychological disorders common among human populations. It is a feeling of annoyance that associates in mind an ambiguous and unknown threat. Owing to anti-stress effects of *Trachyspermum Copticum* in traditional medicine, this paper aims to study the effect of hydroalcoholic extract of *Trachyspermum Copticum* on stress of mature male rat. After seed of *Trachyspermum Copticum* was identified by IAU herbarium, hydroalcoholic extract was extracted by Soxhlet extractor and extract powder was provided by using smart oven. In this experimental study on 33 Wistar male rats (230 ± 20 gr) in intact group, the treatment was injected with DMSO (0.3cc) and groups taking doses of 15, 25 and 50 mg/kg were injected with hydroalcoholic extract of *Trachyspermum Copticum*. All injections were made in the peritoneum and stress test was taken half an hour after injection by use of elevated plus maze; standard indexes of stress appraisal (stay time duration and number of frequent entries into open arm) were checked and recorded. Data were analyzed with one-sided variance analysis and Tukey test ($P < 0/001$). The results show that group taking extract solution compared to the intact group showed no meaningful difference in stress indexes. hydroalcoholic extract in 100mg/kg dose in staying time and number of frequencies into open arm showed meaningful increase compared to the control group. *Trachyspermum Copticum* hydroalcoholic extract has anti-stress effects.

Keywords: Elevated plus Maze, Mature Male Rat, Stress, *Trachyspermum Copticum* hydroalcoholic Extract.

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Studying Abundance of Escherichia coli Uropathogen Resistant to Treatment in Patients Afflicted with Urinary Tract Infection in the Hospitals of City of Qom

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Abstract

Urinary Tract Infection is one of the most prevalent hospital infections created by Escherichia coli bacteria. This bacteria is placed in epithelium of urinary tract tissue and can create inflammation of urinary tract, bladder, kidney and ureter. This bacteria can form biofilm. It is resistant to third generation antibiotics which has turned this illness into an intricate problem in medical community. 100 urine samples were collected from the patients having urinary tract infection within three months of Bahman-Farvardin, 1395-1396 across Qom hospitals and their antibiotic resistance had been examined by Kirby-Bauer. Hybrid disc was used for determination of ESBLs. Out of 100 samples under study with usual biochemical tests 75 samples had been identified as Escherichia coli uropathogen. The results showed that eschrichia coli uropathogen was mostly resistant to gentamycin antibiotic 93% and about 60% of samples were ESBL. Considering the level of antibiotic resistance of bacteria isolated from urinary system as well as strains resistance to ESBL urinary antibiotics, it is necessary to take action to prevent from these bacteria as information level of people in the society increases.

Keywords: ESBL, Escherichia coli uropathogen, Urinary tract infection.

Study of Abundance of Virulence Factors in Uropathogenic Escherichia coli Isolates Producing and non-producing Biofilm Isolated from Diabetic Patients in Shahr-e Kurd Town

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Abstract

Escherichia coli strains causing urinary infection belong to pathogenic Escherichia group outside digestive system which gives rise to different acute factors, leading to colonization, attack and subsequently, reduced reaction of the host immunity system. In this study, 300 samples of diabetic patients suspicious of having urinary infection have been collected at the Shahr-e Kurd town medical laboratory. 51 Escherichia coli isolates were confirmed by using standard biochemical tests. Microtiter plate method was applied for examining biofilm formation. After extraction of DNA, presence of fimbria genes afa, pap, sfa and fimH was checked by PCR method. The findings showed 46 isolates (90%/16) out of 51 isolates of Escherichia coli uropathogenic were able to produce biofilm and reaction of biofilm production was observed; abundance of genes fimH, pap, sfa and afa in isolates that are able to produce strong biofilm 90%, 80%, 80% and 10% respectively; in isolates that produced average biofilm 83.33%, 75%, 15% and 41.66% and in isolates that produced weak biofilm 75%, 66.66%, 45.83% and 33.33% are reported. The findings of research indicate importance of virulence genes in isolates producing biofilm of Escherichia coli uropathogenic. The results of study showed that prevalence of virulence genes fimH and pap among isolates of Escherichia coli uropathogenic isolated from diabetic patients stands high in our region.

Keywords: Escherichia coli uropathogenic, Diabetic Patients, Biofilm, Virulence Genes, Urinary Infection

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Study of Polymorphism of Single Nucleotide rs2286663 in Gene INSL3 Associated with Infertility of Men by RELP PCR Method

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Abstract

Infertility is said to be unsuccessful child-bearing of couples after incessant intercourses without using pregnancy preventative devices after one year. Infertility in men is regarded as multiple-factor syndrome followed by various genetic and non-genetic reasons. Idiopathic infertility is referred to as a type of infertility reasons of which are unclear. Mutation in gene INSL3 results in testicles being hidden inside abdomen and it may play a role in infertility and azoospermia. Encoded protein by gene INSL3 is an insulin-like hormone which is generally secreted from gonadal tissues of men and its production depends on distinctive effect of hormone LH. This gene has various types of SNPs that can interfere with infertility; for the same reason, in this research, rs2286663 is being checked. In this study, 80 patients having azoospermia and 80 control samples have been examined by applying RELP PCR technique. Probable mutation which is concerned had been checked. Data analysis showed that p value amount is bigger than 0.05; as a result, no meaningful relationship was found between the concerned SNP and disease.

Keywords: Azoospermia, Gene INSL3, Infertility.



Comparative study of pregnancy in fasting and non-fasting women Attending Health care and Treatment centers of Qom medical sciences university

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(Received: 12 September, 2017; Accepted: 6 December, 2017)

Abstract

Introduction: Fasting is one of the most important worshipers of Islam. Although pregnant women, and breast-feeding women, and those who may be sick or on a journey,... are exempted from the duty of fasting, some of them do so willingly and eagerly. Considering the importance of nutrition during pregnancy in the health of the fetus and mother, the purpose of this study was to compare the pregnancy status in fasting and non-fasting pregnant women.

Method: The present research was cohort study. 84 pregnant women were put into 2 groups of second Trimester (21 women) and third Trimester (21 women), and non-fasting pregnant women were second Trimester (21 women) and third Trimester (21 women). Sampling was performed randomly, gradually. Data was collected by examination, and interview, and then they were analyzed by SPSS.

Results: The results showed that the anemia of fasting and non-fasting pregnant mothers was not statistically significant in the second and third trimester of pregnancy. There was not statistically significant difference between normal weight gain during pregnancy among fasting pregnant and non-fasting pregnant women in the second and third trimester of gestation. Fasting in pregnant women in the second and third trimester of pregnancy have no effect on the pregnancy status (normal weight gain during pregnancy and maternal anemia)

Keywords: Anemia, Fasting pregnant, Pregnancy status, Weight gain.

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Effect of isokinetic fatigue protocol of quadriceps and hamstring muscles on some of the predictive variables of knee anterior cruciate ligament injury

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Abstract

Background and objectives: Muscle fatigue may lead to imbalance and dysfunction of muscles. On the other hand, measuring imbalances between muscles should not be limited to measuring strength as it is not only parameter indicative of muscle function. Thus, the purpose of this study was to examine the effect of isokinetic fatigue protocol of quadriceps and hamstring muscles on mechanical power and time to peak torque in elite karate girls. subjects and Methods: In this study, 16 karate girls participated. Biodex isokinetic device was used for the local fatigue of quadriceps and hamstring muscles. The muscles mechanical power and time to peak torque at speeds of 180 and 300 degrees per second were measured by isokinetic device before and after the fatigue protocol. Data analysis was made by paired t test. Results: Mechanical power of quadriceps ($P=0.004$) and hamstring ($P=0.000$) muscle groups in speed of 300 degrees per second, significantly decreased after fatigue. But in the speed of 180 degrees per second, not significantly changed ($P>0.05$). Time to peak torque in speed of 180 degrees per second, showed a significant decrease after fatigue for the hamstring ($P=0.04$) and quadriceps ($P=0.01$), but in speed of 300 degrees per second, the difference was significant only for the hamstring ($P=0.025$). Conclusion: According to current study results, fatigue can cause an imbalance in mechanical power and time to peak torque between muscle groups at high speeds; that increases the chance of injury in the knee joint.

Keywords: Mechanical power, Muscular fatigue, Time to peak torque.