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15 Khordad, Islamic Azad University, Qom

Telephone and Telefax: 025-37780014

Journal email: a-biology-j@qom-iau.ac.ir

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Study of Hydroalcoholic Extract Effect of *Lavandula stoechas* L. compared with glibenclamide on Blood Sugar rate in Wistar Male Rats Diabetized with streptozotocin

Zahra Abulqassemi¹, Ramesh Ahmadi^{2*}, Maryam Khoshokhan³

1. MS Graduate, Islamic Azad University, Qom, Iran

2. Assistant Professor, Department of Biology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

3. Assistant Professor, Department of Biology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

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Abstract

Diabetes is the most epidemic endocrine disorder around the world; due to population growth, increased trend of elderly, urban life, obesity pandemic and lack of movement, it is rapidly expanding. Basically, treatment of diabetes is made by prescribing insulin and other blood sugar reducing medicines. Presently, herbal medicines have been concerned because of side-effects of these chemical pills. This article aims to determine the effect of extract from *Lavandula stoechas* L. compared with glibenclamide on the blood sugar reduction in wistar male rats diabetized with streptozotocin. In this study, 48 wistar rats were used in 8 groups. Diabetes was done by injection of single dose of streptozotocin (55mg/kg, IP). The extract of *Lavandula stoechas* L. with 200mg/kg was taken into rats by gavage in 21 days. In research, the effect of *Lavandula stoechas* L. extract was compared with glibenclamide medicine. For data analysis, SPSS was used by applying one-sided variance analysis and Tukey test. The results showed that blood sugar rate of rats of under-treatment groups with extract after gavage intake period compared to under-treatment groups with glibenclamide (0.5mg/kg dose) dissolved in DMSO and saline prove a meaningful difference. The extract of *Lavandula stoechas* L. dropped blood sugar in groups of rat diabetized with streptozotocin, which can probably be because of major compounds in the *Lavandula stoechas* L. extract like: linanol, Butyric acid, propionic acid, valeric acid and germabol. Linanol existing in the plant causes blood sugar to come down with insulin increase; hyperglycemia of linanol effect takes place because of stimulation and activation of insulin receptors in cells.

Keywords: Diabetes, Extract of *lavandula stoechas* L., Glibenclamide, Rat.

* Corresponding Author, Email: ramahmd@yahoo.com



Tracking Genes of Adhesiveness papA in E. coli Bacteria Isolated from Patients Suffering Urinal Infection in one of the Hospitals of the City of Tehran

Shahram Shafi'apour¹, Mohsen Zargar^{2*}, Shahla Mohammad Ganji³

1. MS Student, Department of Microbiology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

2. Assistant Professor, Department of Microbiology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

3. Assistant Professor, Biotechnology and Genetics Engineering Research Institute, Tehran, Iran

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Abstract

E.coli bacteria along with its pathogenic factors is the most prevalent causes of urinal tracts infection. This paper aims to designate epidemic rate of gene papA in strains isolated from the patients afflicted with urinal infection. 104 isolates have been obtained from urine samples of the patients from urinal infection. Study of epidemic rate of the three mentioned genes belonging to PAP gene group was conducted through PCR method. After that, relationship of abundance rate of this gene with other demographic specifications of patients had been statistically examined. The results showed that percentage of abundance of under-study gene of papA was equal to 40.38%. Besides, the gene identified in strains isolated from patients with factors like upper age of 50 years and urinal infection symptoms proved meaningful difference (p value>0.05) and showed no meaningful relationship with other specifications like background diseases, all types of surgery record and....The results of this research can help improve prevention and treatment of patients.

Keywords: E.coli, papA, Urinal Infection.



Modeling of Synthetic Behavior of Glucose Oxidase Enzyme Stabilized in Tragacanth Carrier

Golnar Sari^{1*}, Maryam Utadi²

1. MS Student, Department of Chemical Engineering, Faculty of Engineering and Technical Sciences, Islamic Azad University, Tehran Central Branch, Tehran, Iran

2. Assistant Professor, Department of Chemical Engineering, Faculty of Engineering and Technical Sciences, Islamic Azad University, Tehran Central Branch, Tehran, Iran

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Abstract

Glucose oxidase enzyme is among intensive enzymes in industry and is placed within oxidoreductase group. Glucose oxidase enzyme is catalyzer of glucose reaction of converting to Gluconic acid and hydrogen peroxide. In this paper, glucose oxidase enzyme, its construct and function, tragacanth polymer, enzyme fixation methods and different statistical model-making methods have been introduced. Three variables of PH, temperature and stabilization time have been applied by Design Expert software for modeling and optimizing enzyme activity. Next, based on statistical modeling, a function has been given for activity level of glucose oxidase stabilized in tragacanth carrier has been chosen in terms of three variables. According to the results obtained, all three variables under study for stabilized glucose oxidase enzyme activity have been very effective. Their intervening effects have also been effective. Enzyme activity optimization was made by use of response surface methodology. The results of 19 tests conducted in the previous research have been applied for examining glucose oxidase enzyme activity by use of DOE through RSM. The optimized conditions for the most glucose oxidase enzyme activity rate in PH equaling 5.98, 37 centigrade degrees of temperature and stabilization time of 28.33m were determined where the maximum rate of stabilized glucose oxidase enzyme activity was obtained as $1116/2 \mu\text{mol}/\text{min}$. Moreover, comparison of lab results and model showed that the results obtained from the existing model were well consistent with lab results and average error of 2% has been calculated for this research.

Keywords: Enzyme and enzyme activity, Enzyme modeling, Enzyme synthetic, Glucose oxidase, Stabilized enzyme.

* Corresponding Author, Email: sari.golnar@gmail.com



Hydroalcoholic Extract Effect of *Cuminum cyminum* L. on Stress in Mature Male Rats

Zahra Alami Heshmat¹, Nasrin Heydariya^{2*}, Maryam Khoshokhan Mozaffar³

1. MS Graduate, Islamic Azad University, Qom, Iran

2 & 3. Assistant Professor, Department of Biology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

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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. This paper aims to study the effect of hydroalcoholic extract of *Cuminum cyminum* L. on stress of mature male rat. After *Cuminum cyminum* L. was identified by IAU herbarium, hydroalcoholic extract was extracted by Soxhlet extractor and extract powder was provided by using oven. In this experimental study on 33 vistar male rats (230 ± 20 gr) in intact group, the treatment was injected with DMSO (0.3cc) and groups taking doses of 50 and 100mg/kg were injected with hydroalcoholic extract of *Cuminum cyminum* L. (n=8). 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 group taking extract solution compared to the intact group showed no meaningful difference in stress indexes. *Cuminum cyminum* L. DMSO hydroalcoholic extract in 100mg/kg dose in staying time and number of frequencies into open arm showed meaningful increase compared to the control group. *Cuminum cyminum* L. hydroalcoholic extract has anti-stress effects.

Keywords: Stress, *Cuminum cyminum* L., Hydroalcoholic extract, Elevated plus maze, Mature male rat.



Identification of *Listeria Monocytogenes* from Raw Milk by Cellular Culture and PCR of Gene *actA*

Mastaneh Gholami, Mohsen Zargar*, Seyyed Soheil Aqa'ie

Department of Microbiology, Faculty of Basic Sciences, Islamic Azad University, Qom, Iran

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Abstract

Foodstuffs are exposed to pollution in different ways. One of the pathogenic bacteria that is transferred through raw milk and vegetables to man is *Listeria monocytogenes*, leading to different diseases like: meningitis, conjunctivitis, septicemia and abortion. Considering the reports received for milk contamination and its products with *Listeria monocytogenes*, particularly in developing nations like Iran, this article has attempted to explore contaminations and milk and its products with this bacteria in the Qom province. Various studies have demonstrated presence of pathogenic genes like *actA*, *prf*, *plcA*, *plcB*, *hlyA* and *mpl* in *Listeria monocytogenes*. This bacteria is able to move between and inside cells, escaping from phagolysosome, resistance to humoral immunity defense and the host cell reproduction because of having the ability of polymerization actin. Protein *actA* plays a leading role in controlling reactions of actin strings in environmental cytoplasm of the host cell, provoking *Listeria monocytogenes*. In this paper, 100 samplings of raw milk were identified of having *Listeria monocytogenes*; three samples of *Listeria monocytogenes* (3% contamination) could be isolated and presence of *actA* gene was confirmed in these strains by using microbiological methods, biochemical methods and molecular and serologic confirmation based on *actA* gene.

Keywords: *Listeria Monocytogenes*, *actA* gene, Culture Method, PCR



Study of Effect of Expanded Spectrum of Electrons Energy on Dose Absorbed in the Tissue

Mahdi Soleymani¹, Parviz Zobdeh^{2*}

1. MS Student, Department of Physics, Islamic Azad University, Qom, Iran

2. Assistant Professor, Department of Physics, Islamic Azad University, Qom, Iran

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Abstract

Electron therapy is a therapeutic method of brain tumors where absorbed dose has a great dependency on energy. This study aims to verify the level of dose dependency on energy. For doing so, by using MCNP, firstly one complete phantom of simple body was simulated based on the current standards. Since each phantom model is being introduced by one specific name on the part of the writer, phantom, in this study, is named MAS in this paper. For the mentioned phantom, two tissues have been considered: one bone tissue that is defined in two hands, two feet, chest box and skull based on ICRU46 standard (International Commission on Radiation Units and Measurements) and a soft tissue which is made equivalent to material water. Later, one electron source in the shape of disc-level strip has been designed with 5cm of radius, standing 50 cm far from patient with 10MeV energy; hence, the absorbed dose rate and damage inflicted on the healthy tissue can be measured. Next, strip energy is changed into 5 MeV and the results are re-checked. The obtained non-linear logarithmic chart of dose shows that less dose has been absorbed in lower energy (5MeV). Of course, this important thing depends on size and place of tumor, but it can be said the healthy tissue is less damaged in electron radiation with 5 MeV compared to 10MeV energy. Also, linear diagram shows it is further possible to cure surface tumors with (5MeV). Besides, in comparison of dose distribution of photon and electron, as seen in bi-dimensional and tridimensional images, maximum dose areas are shaped like peak and energy has been more absorbed than other areas; in other areas dose amount has dropped as shown in yellow, green and blue colors. The red colors in those areas show that tumor is being better cured and less damage is being made on the healthy tissue in blue, green and yellow areas.

Keywords: Electron therapy, Dose, Phantom, MCNP.