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Evaluation of nosocomial infections in one of hospitals of Qom ,2008

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Abstract

Introduction and objective: Each year two million patients in the hospital were infected by nosocomial infections, that while person was being confined to bed into hospital does not exist, and kill more than 19,000 of patients and cost more than 5 / 4 million dollars in the year. Despite this fact that one third of nosocomial infections can be controlled, but it is still in developed and in developing countries a very serious risk. The aims of this study is explain new information regarding the prevalence of microbial and unmicrobial factors affecting in nosocomial infections in a hospital in Qom.
Materials and Methods: Int his study , confined to bed patients are considerd in ccu, Icu, men and women surgery, nephrology, neonatal and infectious part ,of1 / 1 / 2008 to 01/01/2009. In this way ,the nurses were recorded information in questionnaire, including First & Last Name, age, sex, date of confined to bed, name of hospital part, kind of illness, kind of clinical symptom of nosocamial infection, hospital infection location, date of hospital infections. Then, this patients were sampled and samples were evaluated in microbiology laboratory. samples were including sputum, blood, urine and ulcerous. For analysis of the results was used of statistical tests as correlation.
Results: Among 1043 patients studied in this one year, 105 patients with mean age of (۶۴.۱۶ ± ۲۶.۴)years(ranging 30 days to 126 years) were diagnosed and 19 patients died after 48 hours of suffering to nosocamial infection. Number of women infectious confined to bed in to the hospital 50 persons and number of men was 55 patient. Overall incidence rate of NI was 35/10000 patients.In this study, bacteria, viruses and fungi were separated as factors causing NI in confined to bed patients. Regarding the etiology of infection were consist of:
from 37 cases (85 / 33%)*E.coli*, from 14 cases (13/33)*Gram positive Cocci*, from 12 cases (42/11)*Enterobacter*, from 10 cases (52 / 9)*Alkaligenes*, from 9 (57 / 8) cases *Klebsiella*, from 8 cases (61 / 7)*Pseudomonas* were isolated . So, it were isolated of 5 (76 / 4) cases , *HBS Virus* and of four cases (80 / 3), *HCV Virus*. Also, Of 4 (80 / 3) cases ,*Candida albicans* and of two cases (90 / 1) *Aspergillus* were isolated . Incidence density in Icu was ۸۶.۶۰,in CCU ۳۹.۶۴,in internal medicine ward was37.71,in surgery was 28.67,in orthopedic ward was14.19,in child ward12.42,in infectious ward 9.77,in heart ward 5.4,in urology ward 4.67 and ENT ward 2.44 /10000 patients /day.
According to test Corrolation ,there is significant relationship between increasing age and increasing incidence of nosocomial infection. ($p<0.01$)Also, this test showed that there is no relationship between sexuality and the prevalence of nosocomial infection. ($P>0.05$)
Discussion: According to the results obtained, it was shown that certain factors of N I in the age range (60-90) years,and neonates, most occur due to immune system defects, avitaminosis, diabetes, surgeries, pneumonia and treatment of medical staff. Relative prevalence of nosocomial infection was through the urinary catheter (42%), surgical wound (24%), lower respiratory cannal(18 %), blood flow (12%) and remainder organs (14%). Therefore,attention to the results of this kind of researches and prevention of mortality of this patients to nosocamial infection is very essential.The result of in study indicate the lower frequency of NI in comparison with the national results.proper and timely use of medical intervention,hand washing especially for health personnel,health education,continuous supervision,correct use of disposable equipments,controlled use of antibiotics good care of surgical wounds are the most important to be considered.
Key words: Nosocomial infections - Intensive care wards – incidence Density

Designing and construction of recombinant BCG secreting HCV polytope as a candidate vaccine

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ABSTRACT

Background and objectives: Liver diseases associated with chronic hepatitis c virus (HCV) infection are serious public health problems worldwide. There is neither an efficient therapy nor a vaccine available against this virus. Cellular immune responses, specially the cytotoxic T-lymphocytes (CTLs) play a key role towards the HCV clearance. Considering that the Bacillus Calmette-Guerin (BCG) as a tuberculosis vaccine has the ability to stimulate the cellular immunity, the final aim of this study was ¨construction of a recombinant BCG (rBCG) as an HCV vaccine capable of secreting a polytope sequence composed of the immunodaminant HCV epitopes for the effective induction of HCV-specific CTLs.

Material and Method: Hepatitis B surface antigen (HBsAg)-fused polytope sequence composed of 5 HCV epitopes derived from $core_{132-142}$, $E2_{405-414}$, $E2_{614-622}$, $NS3_{1406-1415}$ and $core_{39-48}$ antigens made by SOEing PCR was further fused to the HSP60 promoter and BCG-alpha-antigen signal sequences. The produced HSP-αS-HPOL fragment was further cloned into the kanamycin-encoding pVN2 shuttle vector and the final pHSP-αS-HPOL recombinant plasmid was transformed into the BCG cells by electroporation technique. The transformants were screened on the kanamycin containing media.

Results: The pHSP-αS-HPOL recombinant BCG-plasmid was successfully constructed and confirmed by restriction analyses and sequencing reactions. Transformation of BCG cells was efficiently achieved following intensive optimizations of electroporation parameters. The kanamycin-resistant transformants were screened in kanamycin-media in four weeks.

Conclusion: Appearance of kanamycin-resistant BCG colonies indicated the possibility of expression of pHSP-αS-HPOL plasmid and its successful transformation, while motivated us to analyse the secretion of HCV-polytope and perform the in vivo immunogenicity assays.

Keywords: Hepatitis c, Electroporation, rBCG.

Propagation of Encephalomyocarditis virus particles in A549 and L929 cell lines

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Abstract

Background: EMCV virus belongs to the Picornaviride family and Cardioviruses genus. Replication results of EMCV is applicable for L929 and A549 cell lines on studies related to measure the potency of proteins such as interferon and biological assessment and other various researches. In order to choose the appropriate virus cell line, comparison of the EMCV virus replication in A549 and L929 cell lines is experimentally investigated. The aim of the present study is to compare the kinetic of growth of EMCV in A549 and L929 cell lines.

Material and method: The goal of this study is to investigate the effect of the EMCV virus with the determination of the virus titer (CCID50) after passing five days on A549 and L929 cell lines under same condition. After a specific time (5 days), these cell lines are cultivated with the same virus in different densities with Reed-Munch method. MTT coloring and OD assessment are carried out with the Elayza reader system. The A549 virus titer obtained from Reed-Munch method after 24 hours reached $10^{1.5\ CCID50}/_{ml}$, while the virus titer of $10^{3.5\ CCID50}/_{ml}$ is obtained for L929 virus. In the following days the more virus titer is reported for L929 virus. A549 virus titer stopped after 3 days with the quantity of $10^{3.5\ CCID50}/_{ml}$ while the L929 cell line titer continued to grow for the next four days and reached $10^{6.5\ CCID50}/_{ml.}$. MTT coloring was done after CPE study and virus titers of $10^{3.5\ CCID50}/_{ml}$ and $10^{6.5\ CCID50}/_{ml}$ are reported for the A549 and L929 respectively.

Conclusion: Although EMCV virus has an ability to grow in A549 and L929 cell lines, the growth kinetic of the L929 is faster than A549. Showing the higher virus titer, it can be concluded that L929 is more appropriate for the EMCV cultivation. In studies related to EMCV, Using L929cell line in studies causes less time and cost to be consumed.

Keywords: Encephalomyocarditis virus, A549, L929, Cytopatic effect

Proposed a mthod to evaluate multitube micro system for identification of Enterobacteriaceae

Abstract

The purpose of this project is to propose a method to evaluate Enterobacteriaceae diagnostic kit which is base on multitube micromethod. Differential staining of bacteria can provide preliminary information when a medical technician is attempting to identify an unknown type of infection-causing bacteria. Basic information, such as whether an organism is Gram positive or Gram negative, is used to decide which diagnostic test will be employed to determine the genus and species of the bacterium in question.

One of the several devices available commercially for identification of Enterobacteriaceae is the multitube micromethod, a plastic strip holding 10 miniaturized compartments, or cupules, each containing a dehydrated substrate used to determine the metabolic capabilities, and, ultimately, the genus and species of enteric bacteria in the family Enterobacteraceae. After inoculating with a saline suspension of a pure bacterial culture, rehydrating and the strip is then incubated in a small, plastic humidity chamber for 18-24 hours at 37°C. Each tube (an individual test) is assessed for a specific color change indicating the presence of a metabolic reaction that sheds light on the microbe's identity. Some of the cupule contents change color due to pH differences, others contain end products that have to be identified using additional reagents. The kit was validated by examining four Enterobacteraceae and comparing its results with available database. The Resuls are a good an agreement and this method is suitable benchmarking.

Comparison induction of inflammatory cytokines production by recombinant Shiga toxin and shiga toxin producing strain

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Abstract

Shiga toxin (Stx) production by Shiga Toxicogenic *Escherichia coli* (STEC) is associated with hemolytic uremic syndrome. Stx binds to globotriaosylceramide (Gb3-cer) receptors on eukaryotic cells and promotes endocytosis. It then inhibits protein biosynthesis; which triggers apoptosis in the affected cell. Stx has role in apoptosis and immune activity. Stx can induce both apoptosis and necrosis and secretion of cytokine, depending on the cell type.

The aim of this study is to assess the effect of recombinant Shiga toxin in induction of inflammatory cytokines in epithelial and monocytic cells. The HeLa and THP-1 cells were used to study the effect of O157 extract and recombinant Shiga toxin. For this purpose 10^6 cells were cultured in 6 well plates, different concentrations of Shiga toxin were added to each well. Then the cells were collected after 24 hours of incubation. Total RNA was extracted and used in RT-PCR for detection of IL-1α، IL-1β، TNF-α and IL-8 cytokines.

The affected cells with recombinant Shiga toxin and O157 extract expressed IL-1α and IL-8 mRNA however, TNF-α mRNA was produced in the THP-1 cells.

A Comparative Study of anti-mutation and anti-carcinogenic properties of Rosemary (*Rosmarinus officinalis* L.) and Lavender (*Lavandula angustifolia* Mill.) during their different developmental stages

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Abstract:
Background and objectives: As car VI ads through the world as well as the country of Iran, the need for medicines with fewer side effects and more efficacy has increasingly become the center of attention of researchers. Aditionally, more than 60 percent of of anti-cancer compounds for treating cancer patients is derived from herbs and micro organisms. Rosemary (*Rosemarinus officinalis* L.) and lavender (*Lavandula angustifolia* Mill.) of the mint family (Lamiaceae) posess numerous medical properties such as anti-cancer, anti-tumor and wound and infection healing qualities. Due to the importance of the above mentioned herbs and their increased cultivation in different climatic conditions all around the country of Iran, this study has focused on the anti-mutation and anti-cancer effects of them.
Material and Methods: To investigate the anti-mutation and anti-cancer properties of these two herbs, their flowers were collected in summer and fall from southeast of Tehran. The specimens were dried in the room tempature, in the shade. Methanol and ethanol extracts were produced. Following AIMS protocol and through utilizing Salmonella TA100, the anti-mutation effects of the extracts were determined. To investigate the anti-cancer effect, mouse liver microsome (S9) was added to the specimen. Each test was repeated three times simaltanously. Sodium Azide was used for the positive control group and water and organic solvents were used for the negative control group. The anti-mutation and anti-carcinogenic effect was calculated using the *ong* equation.
Results: Methanol extract of rosemary flowers was most effective in fall in terms of anti-cancer (65.95%) and anti-mutation (63.12%) properties. Ethanol extracts of lavender had minimum anti-cancer (32.80%) and anti-mutation (30.88%) effects in summer.
Conclusion: Extract of rosemary flowers was more effective in comparison to that of lavender. Extract of the specimens collected in the fall was more effective, as well. Methanol extract is more effective in terms of anti-mutation and anti-cancer compared to ethanol extract.
Keywords: generative phase, seasonal changes, AIMS protocol, Salmonella TA100, Sodium Azide

The assessment of learning on Islamic Azad University branch Firooz-Abad University Students' awareness about AIDS.

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Abstract:
Background: AIDS is one of the most serious fatal virus infections around the world. The present research aims at investigating the influence of giving lecture and providing pamphlet to increase the awareness of university students' about AIDS in Islamic Azad University branch Firooz-Abad
Material and method: This research is a Quasi- Experimental study. The population study was selected by a simple Random sampling from 400 University students' (medicine and nonmedical) in Islamic Azad University branch Firooz-Abad. The groups included individual who were trained by lecture and Pamphlet.
Data was collected by a questionnaire (two main parts: A) demographic characteristics and B) question about AIDS) on the awareness of university students about the AIDS. Reliability and validity of the questionnaire were determined by infectious mans. The results were analyzed by using descriptive statistics, T-student test. The data was analyzed by SPSS (ver16).
Results: According to findings of this study, the mean score of knowledge of university students' about AIDs by pamphlet before and after education were 27.55 and 37.51, respectively (t=12.212, P=0.000) and by lecture before and after education were 32.74 and 45.69, respectively (t= 13.574, P= 0.000) and lecture and pamphlet before and after education were 30.16 and 41.62, respectively (t= 18.144, P= 0.000). T-test was used to test the difference between means. Test results indicated that there is significant difference between two means (P= 0.000).
Conclusion: Regarding the results of this survey, we can use both lecturing and providing pamphlet increase the University students' awareness. However, if the condition is suitable, using lecture method to increase university students' awareness is preferable. Therefore, it seems that acquisition of knowledge and skills about preventive measures of AIDs in schools and universities can reduce AIDs and promotion of health among youth.
Key word: learning, AIDS, University students', pamphlet, lecture

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