Prevalence of Metalobeta-lactamase Producing Pseudomonas aeruginosa Strains Isolated in Iran: Meta-analysis

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Abstract

Background and objective: Since the lethality of P. aeruginosa infections is high once the organism has caused disseminated disease and Resistance of P.aeruginosa to antimicrobials used for primary treatment due to produce metalobetalactamase enzyme has been shown to correlate with an adverse clinical outcome early and adequate antibiotic therapy is essential. The aim of this study was to evaluate the MBL resistance among isolates of Pseudomonas aeruginosa in Iran.

Material and methods: by using search the keywords in information Databases such as SID, Magiran, Iranmedex, Sciencedirect, Pubmed and Google Scholar, a total number of 44 papers were selected between 2007-2014 years, according to approaches to enrolled in study. All papers after qualitative control by using random effect model enrolled to Meta analysis. Heterogeneity between studied was assessed by I-Square index, and then data were analyzed by using STATA Ver. 10,R software.

Results: 6771 samples Among 44 papers surveyed and Prevalence rate is 25% (CI:95%:21-29). Most prevalence belonged to 88% in center (CI:95%:81-94) and lowest prevalence was 1% (CI:95%:1-3) for Southeast of iran. Among the genes of MBL, VIM gene With the prevalence of 64%(CI:95%:48-79) the highest frequency of certain genes and IMP,SPM و SIM genes to the next in quartiles.). Most antibiotic resistance prevalence belonged to cefepim by 81% (CI:95%:74-87) and lowest prevalence was 49% (CI:95%:38-60) for Imipenem.

Conclusions: Recent studies show that the growth of MBL-producing P. aeruginosa strains in the country is rising. Due to increased antibiotic resistance caused by MBL**,** And also because Pseudomonas aeruginosa is the opportunistic pathogen, Isolated strains cause this type of resistance to determine the appropriate treatment and Prevent the spread of the most recommended.

Keywords: Pseudomonas aeruginosa,metaloBetalactamase, Meta analysis, Iran

Isolation and Molecular Identification of Antifungal Producing Rare-actinobacteria against *Candida albicans*

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Abstract

Background and objective: In last decades, fungal diseases have been treated by using antifungal antibiotics, e.g. azoles, polyenes and candicidines. Also, antifungal resistant Candida was evoluted, too and therefore, it needs to find new antifungal agents. Actinomycetes have been considered as main sources to find new antibiotics and various secondary metabolites during the last six decades. However, frequency of isolation of new metabolites from predominant actinomycetes (members of Streptomyces genus) reduced during two decades and therefore rare-actinomycetes have been used as promising sources to find new matabolites from various environments. In this research, antifungal producing rare-actinomycetes have been isolated from various soils of Iran.
Material and methods: The soil samples were dried and appropriate dilutions were cultured on ISP2 agar. The morphology of colonies, microscopy and diaminopimelic acid test were examined on the isolates. Antifungal effect of the fermentation broth of the isolates was done against Candida albicans using well diffusion assay.
Results: The results showed that among 50 actinomycetes isolates, 9 isolates have anti-Candida activity. The results of 16S rRNA gene analysis were revealed that the potent strains were belonged to Nocardia, Actinomadura, Streptomyces, Nocardiopsis, Martelella and Saccharomonospora.
Conclusion: Among the isolates, the strain UTMC 2325 had highest activity (34 mm) and had 98.84% similarity in 16S rRNA gene analysis to Nocardia rhamnosiphila. This research showed that the soils of Iran can be considered as promising sources to find antifungal producing actinomycetes.
Keywords: Antibiotic, Actinobacteria, Candida albicans, Nocardia

The prevalence of Nosocomial Infections in Terms of the Systems Involved, and Microorganisms in Patient Wards of Tehran Taleghani Hospital. 2015

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Abstract

Background and objectives: One of the most important causes of mortality, costs and length of stay in hospitals is nosocomial infections. The aim of this study was to analyze the situation of nosocomial infection in Tehran Taleghani Hospital.

Materials and methods: This study was a cross-sectional, descriptive and survey. Researcher collected the data from culture positive patients, chart temperature, according to a survey of the different parts of the hospital (infection control expert walk round) for one year in 2015, then entered in INIS software and reporting the frequencies.

Results: The highest prevalence of nosocomial infections was reported among adults (15-65) with 83.17 % of bloodstream infections (48%), respectively. In terms of microorganism, the highest of Kelebciella (20%) from ICU was detected.

Conclusion: Regardless of people age as well as involved systems, type of microorganism and also highest prevalence ward were consistent with previous studies.The results showed that entering timely, accurate information and continuous reporting in addition to the immediate notification to managers could be crucial in decision making for effective corrective and preventive action.

Key words: Nosocomial infections, system involved, microorganisms, patient wards

Evaluation of Booster Effect of Tuberculin Skin Test in Diagnosis of Latent TB in Health Care Workers of Firoozgar Hospital

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Abstract

Background and objective: Tb is still a major problem in public health all around the world. The goal of testing for latent tuberculosis infection is to identify individuals who are at increased risk for the development of tuberculosis and therefore would benefit from treatment of latent TB infection. Tuberculin skin test (TST) has been used to identify individuals with previous sensitization to mycobacterial antigens.. False negative tuberculin skin test results may occur in the setting of biological limitations. Biologic limitations include immunosuppression or natural waning of immunity.. Booster response refers to a positive TST performed one to four weeks after an initial negative TST in the absence of exposure (such as pre-employment screening of healthcare workers).

 Materials and methods: In this study booster effect was evaluated in health care workers with negative PPD test in Firoozgar hospital at spring and summer 1394. In persons with negative PPD test this test was repeated after 2 weeks.

Results: In 85 cases (80.2%) PPD test was negative .In 21 cases (19.8%) test was positive. In 77 case with negative test second PPD test was performed .After second test 60 cases (78%) had negative result and 17 cases (22%) had positive test .In this study positive result was increased from 19.8% to 35%.

Conclusion: Overall in this study, positive results with two-step method turn from 19.8% to 35%.So two-step method is recommended for accurate diagnosis. Therefore we have concluded that second PPD test is recommend for better diagnosis of latent tuberculosis(TB) in health care workers.

Key words: Tuberculin skin test, Booster effect

The Survey of Affecting Factors on Head Lice Infestation Treatment Success. Qom.2015

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Abstract

Background and Objectives: The prevalence of head lice infestation rate has been increased among different communities in recent years. In many cases, the treatment of this health problem has not been successful in the short time. This study aimed to determine the factors influencing successful treatment of head lice in Qom province during 2015.

Materials and methods: This descriptive cross-sectional study was conducted on all patients with head lice infestation who referred to the Qom city Health Center during 2015. In this study, after case finding, patients with head lice were treated with Permethrin 1% shampoo, twice a week. After completing a course of treatment, the treatment was checked and then success questionnaires were completed for them. Then After data collection by a structured questionnaire, statistical analysis was conducted using Chi-square test and Fisher's exact test in SPSS software (V.16).

Results: Out of 38237 suspected cases with head lice infestation, 11223 (29.35%) of cases were infested with head lice. 43% of cases were treated after a course of treatment. Regarding affecting factors such as the principles and standards in using of permethrin shampoo based on its manufacturer (98.95%), Treat all affected household members simultaneously (96.81%) and applying a mixture of 50% water and white vinegar for 30 minutes and then wash off and to comb through the infested hair daily (91.98%) and Applying it along with a carrier oil such as olive oil, bitter almond on infested hair (80.69%) were affecting factors to treat head lice with permethrin shampoo.

Conclusion: Head lice treatment success depends on several principles and factors only by following these principles and standards tips, including the use of permethrin shampoo with methods that approved by Ministry of Health, infested people will heal. In this context, health education should be given to the people and their families, by Diseases Control Center of Ministry of Health and health care workers.

Keywords: Head lice, Permethrin shampoo, Treatment success, Qom

Evaluation of Toxicity and Anticancer Activity of Isolated Fraction from the Venom of Iranian Viper, *Macrovipera lebetina* on Lung Cancer Cell Line, TC-1

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Abstract

Background and objectives: Cancer is a life threatening disease determined by uncontrolled differentiation and proliferation of cells. The cells escape apoptosis would be led to metastasis. Chemotherapy is the conventional method in treatment of cancer but the tumor often will be resistant to chemotherapy regimen leading to crucial side effects. Prevalence of lung cancer is 19.4% of all cancers. Many bio-toxins are useful source for biologically active compounds with anti-tumor activity.

This study was aimed to finding an anti-cancer agent from the venom of Iranian snake viper, Macrovipera lebetina. The venom fractionated and anti-adhesion activity was examined. Candidate fraction selected and subjected to anion exchange chromatography to further fractionation. Subsequently, anti-adhesion and toxic activity determined on lung cancer line.

Mateials and methods: Viper venom prepared and separated by gel filtration chromatography using sephacryl S200.The concentration of fractions determined and anti-adhesion effect of the fractions evaluated on TC-1 cell line. Then, the active fraction was purified by anion exchange chromatography using MonoQ resin. Anti-adhesion activity and toxicity of resultant fraction determined on the cancer cells again. Toxicity of candidate fraction controlled on fibroblast cell line.

Result: Based on results six fractions were collected. Fraction 5 was active on cell lines and selected for anion exchange chromatography .Four anionic and two cationic fractions showed in the chromatogram and collected for anticancer activity. Fraction 3 has the most anti-adhesion activity. Totally anti-adhesion and toxicity on cancer cell line calculated as 40%. This fraction showed about 5% toxicity on fibroblasts.

Conclusion: An anti-adhesion fraction was detected in the venom of Iranian viper snake, Macrovipera lebetina. Toxicity of candidate fraction on cancer cells was less than anti-adhesion activity. Less toxicity was showed on fibroblast cells. Natural anti-cancer compounds derived from venomous animals can help fighting against cancer. It is the first report of an anti-adhesion fraction from an Iranian Viper with less toxicity on normal cells. Protein sequencing and in vivo study in mouse model of lung cancer would be suggested.

Keywords: Macrovipera Lebetina, Gel Filtration Chromatography, Ion Exchange Chromatography, MTT Test, Lung cancer cell line