

Antibiogram Pattern of Acinetobacter Isolated from Clinical Samples at Tehran's Araad Hospital (2009-2011)

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Background and objective: Acinetobacter is common in nosocomial pathogen and it is a health care associated opportunistic multidrug resistant pathogen. The purpose of this study is to determine the sensivity and resistance of Acinetobacter strains that was isolated from clinical samples of patients who was admitted to Arad hospital in Tehran.

Materials and methods: In this descriptive examination, after extracting Acinetobacter derivations from clinical samples (Urine, sond fuli, sputum, wound, blood and bronchial), Their sensitivity was measured using standard Kirby-Bauer test, in contract with following antibiotics Amikacin, Ciprofloxacin, Gentamicin, Imipenem, Ceftriaxone Sulfametoxazole Trimetoprim, Piperacilin and Cefotaxime and then the results analayzed.

Results: In this study of 225 samples of Acinetobacter derivation isolated from clinical specimens, the most amount of sensivity was Piperacilin and Ciprofloxacin and the most amount of resistance was to Gentamicin and Amikacin.

Conclusion: The results of this study are indicating that Acinetobacter strains resistance has increased against Gentamycin and Amikacin; presumably due to excessive consumption of these antibiotics. It is obvious that, with increasing consumption of antibiotics, and consequently, augmentation of antibacterial resistance, control of this resistance factor is necessary and inevitable, we recommended to avoid unnecessary usage of antibiotics.

Key words: Acinetobacter, Antimicrobial resistance, Gentamycin, Araad hospital

Detection of Mycoplasma Infection in Cell Cultures by PCR-ELISA

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Abstract

Background and objective: Mycoplasmas, particularly species of the genera Mycoplasma and Acholeplasma, are known to be occasional microbial contaminants of cell cultures that produce biologics. The aim of this study is to alternate a specific, sensitive and rapid method for detection of a variety of Mycoplasma species in cell lines by PCR-ELISA.

Material and methods: This method was based on a PCR-ELISA reaction using genus, specific primer and species specific primers for Mycoplasma species that labeled with Digoxigenine and specific probe, which labeled by biotin.

Results: Mycoplasma contamination using PCR-ELISA was examined for 183 different cell line deposited in national cell bank of Iran. PCR-ELISA showed that 48.6 % of cell lines were contaminated whit Mycoplasma while 27.3% of them were found to be infected with microbial culture. PCR and PCR-ELISA methods, both of them showed the same results. In comparison to microbiological culture, PCR-ELISA method was shown to be 100% sensitive and 70.7% specific.

Conclusions: Microbial culture and staining are common methods for detection of cell lines Mycoplasma contamination. These methods are time-consuming and so rapid contamination detection is critical for cell lines. For this reason PCR-ELISA method is recommended for rapid mycoplasma detection.

Key Words: Mycoplasma, cell culture, Microbiological culture, PCR-ELISA

Antimicrobial Effect of the Aqueous and Ethanolic *Satureja bachtiarica* Extracts “in vitro”

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Abstract

Background and objective: *Satureja* belongs to Lamiaceae family. About 14 species have been reported in Iran. The aim of this study was to determine antimicrobial effect of the aqueous and ethanolic extracts of *Satureja bachtiarica* (different concentrations) on *Listeria monocytogenes* PTCC 1297, *Bacillus cereus* PTCC 1154, *Enterobacter aerogenes* PTCC 1221, *Enterococcus faecalis* PTCC 1237 & *Salmonella typhi* PTCC 1609 ” in vitro”.

Material & methods: In this study, antimicrobial effect of the extracts evaluated by two methods, “Collins method” (spreading of the extract on medium surface) and “disk agar diffusion method”. The Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) for both species determined by using a dilution method.

Results: The results showed that in “disk agar diffusion test”, ethanolic extract had inhibition effect on *Listeria monocytogenes*, *Bacillus cereus* and *Enterococcus faecalis*. The result shows that MIC of *Satureja bachtiarica* leaves of the aqueous and ethanolic extracts for *Enterobacter aerogenes* was 64 and 32 mg/ml respectively. The MBC aqueous and ethanolic extracts of *Satureja bachtiarica* leaves for *Enterobacter aerogenes* was 128 and 64 mg/ml respectively.

Conclusions: The ethanolic extract of *Satureja bachtiarica* leaves “in vitro” have a significant antimicrobial effect on gram-negative bacteria *Salmonella typhi* and *Enterobacter aerogenes* and the gram-positive bacteria *Listeria monocytogenes*, *Bacillus cereus* and *Enterococcus faecalis*. *Enterobacter aerogenes* was resistant to most of the aqueous and ethanolic *Satureja bachtiarica* extracts.

Key words: *Satureja bachtiarica*, Watery and ethanolic extract, Antimicrobial effect

Typing of Methicillin Resistant *Staphylococcus aureus* Strains Isolated from Patients in Isfahan

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Abstract

Background and objective: *Staphylococcus aureus* is a common cause of infection among human and animals and known as community-acquired and nosocomial pathogen. Most of the isolates contain lysogenic phages which are responsible for production of various virulence factors. Methicillin resistance in *S. aureus* is related to *mecA* gene. *mecA* gene, its regulatory genes, resistance genes to other antibacterial agents and recombinase enzyme gene locus (*ccr*) are located on staphylococcal cassette chromosome (SCC*mec*). The aim of this study was to analyze the antibiotic resistance pattern, and typing of *mecA* gene cluster and *ccr* gene locus of MRSA strains isolated from patients in Isfahan from 2012-2013.

Materials and methods: Totally 293 *Staphylococcus aureus* isolates were collected from 1 hospital in Karaj. All isolates were identified at the species level using specific primers. Susceptibility to 15 antibiotics was determined using disc diffusion method according to guidelines of Clinical Laboratory and Standard institute (CLSI). Minimum inhibitory concentration (MIC) of oxacillin and vancomycin in MRSA isolates were also detected using broth micro dilution assay according to CLSI recommendation. Primers for identification of 6 classes of prophages were used in a Multiplex-PCR assay. *mecA* gene was detected using specific primers. Multiplex-PCR assays were used for *ccr* and SCC*mec* typing.

Results: Among *S. aureus* isolates, 101 strains (34.5%) were selected as MRSA. The highest antibiotic resistance was observed to erythromycin (88%) and followed by ciprofloxacin (85%), clindamycin (84%) and tobramycin (81%) respectively. None of the isolates were resistant to vancomycin, linezolid and synergid. High (MIC \geq 128 μ g/ml) level resistance to oxacillin was observed in 70% of the isolates. Two different prophage types and 2 sub-types were found in MRSA isolates. All isolates contained *mecA* gene and 100% of MRSA isolates harbored SCC*mec* type III and also type 3 *ccr*.

Discussion: High prevalence of different classes of prophages encoding a variety of virulence factors and high oxacillin resistance provide an important role for phages in the evolutionary development of virulence factors and also diversity in methicillin resistance cassette in MRSA isolates. The presence of SCC*mec* type III indicating the high prevalence of hospital acquired MRSA isolates. Prevalence of these highly virulent isolates with high resistance to first and second lines of treatments is a potential treat for public health.

Key words: MRSA, prophages, *mecA*, SCC*mec*, *ccr*

Beliefs of Tuberculosis Patients via Health Belief Model in Referring to anti-TB Center in Zabol

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Abstract

Background and objective: Tuberculosis (TB) constitutes a major public health problem in most developing countries of the world. About one third of the world's population is infected with the disease, 95% of which are in the developing countries and 98% of all TB related deaths occur in these regions. The aim of this study was to assess beliefs of tuberculosis patients regarding tuberculosis disease and its treatment via on Health Belief Model (HBM) in referring to anti-TB center Zabolcity in 2011.

Material and methods: A descriptive cross-sectional study was conducted on all the tuberculosis patients (110 people), referred to anti-TB center Zabol. Sampling method was non probability. Data were collected through a questionnaire which was designed based on HBM and included some additional information such as demographic variables and practice checklist. SPSS software (Version 18) was used for statistical analysis.

Results: In this study 66 female (60%) and 44 men (40%) participated. The mean age of participants was 55.7 ± 18.6 . Tuberculosis smear positive (SP) and smear negative (SN) incidence rate was 50% and 39% respectively. Statistically significant relationships were found between treatment behavior and self-efficacy ($r=0.45$, $p<0.01$); perceived benefit ($r=0.40$, $p<0.05$), perceived barriers ($r=0.39$, $p<0.05$), perceived susceptibility ($r=0.38$, $p<0.05$), and perceived severity ($r=0.34$, $p<0.01$).

Conclusion: An overwhelming majority of the patients had poor knowledge and misconceptions concerning Tuberculosis, so our study highlights the need to change patient's attitudes about TB via HBM.

Keywords: Beliefs, Tuberculosis, Health Belief Model

Lymnaea stagnalis Snails Infection in Trematoda Larval of Shahrekord City Springs

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Abstract

Background and objective: This study was established to determine the *lymnaea stagnalis* snails' infection with trematodes larval stage in one of the springs of the Shahrekord city in Chahar Mahal and Bakhtiari.

Materials and methods: To determine the snail infection to trematodes larval stages, the snails were caught from the field, and transferred to the Parasitology department of Razi Vaccine and Serum research Institute. Then stimulating of snails by light, tubing and squashing of them were used to detection and identification of the isolated cercariae.

Results: Of 400 collected Snails from the referred springs, 320 of them identified as *lymnaea stagnalis*. Observed cercariae were identified and classified as order Plagiorchis, family plagiorchidae and genus opisthioglyphe and plagiorchis.

In Chahar Mahal and Bakhtiari province due to having more than 10% of water content of country, ecological conditions can play important role to developing sensitive snail especially Lymnaeidae and be considered as a critical and suitable habitat for them.

Key words: Fresh water snails, Trematoda, *Lymnaea stagnalis*, Cercaria, Shahrekord

Fauna and Bio-ecology of Sand Flies in Kahak Country, the Endemic Focus of Cutaneous Leishmaniasis in Qom Province (2012)

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Abstract

Background and Objectives: This study was designed to determine the fauna and bio-ecology of Sand flies in Kahak country, the endemic focus of cutaneous leishmaniasis in Qom Province during 2012.

Materials and methods: The present study was a cross-sectional one that conducted on sand flies. It was carried out in Kahak district of Qom province during 2012. Sand flies were collected biweekly from indoors and outdoors (rodent burrows) of three villages, using 180 sticky traps from the beginning May to the end November of the active season. For species identification, sand flies were identified using the valid keys, fauna and seasonal activity also were determined.

Results: A total of 4164 sand flies (1295 from indoors and 2869 from outdoors) were collected and identified. The thirteen species, including three species of the genus *phlebotomus* and three species of the genus *Sergentomyia*. The most common sand flies in indoors resting places were *P.papatasi* (43.47%). Two active peaks of sand flies were observed in late May and late August.

Conclusion: Based on findings, sand flies peak activity in this area was late June and late August. *P.papatasi* was the dominant species in indoors and outdoors. It seems this species can be probable vector for CL in the study area.

Keywords: Cutaneous leishmaniasis, Fauna, Sand fly, Kahak, Qom

Epidemiological Factors of *Ventilator-Associated Pneumonia (VAP)* among ICU patients in Valiasr Hospital of Arak. 2012

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Abstract

Background and objective: *Ventilator-Associated Pneumonia* (VAP) is one of the subgroup of Healthcare- Acquired Pneumonia (HCAP) of which is one of the causes of death in hospitalized patients. The aim of this study is evaluation of epidemiological factors of *Ventilator-Associated Pneumonia* among ICU (Intensive Care Units) patients in Valiasr Hospital of Arak in 2012 summer.

Materials and methods: this cross-sectional study was conducted for 3 months (2012 June to August) and included all patients had been hospitalized in ICU wards of Valiasr Hospital and in this time VAP diagnosis was made for them. Patients by using of checklist of which was included demographic, physical and laboratory results information were studied and follow up at study entry, during hospitalization and after hospital discharge. Finally the data were analyzed by using SPSS₁₆ statistical software and Chi² test.

Results: Of the 67 patients surveyed during the study, 60 patients (89.6%) with VAP (Internal ICU (26.8%), Surgery ICU (62.7%)) were diagnosed. The most common pathogens causes of VAP in patients were *Acinetobacter spp* (40%), *Staphylococcus aureus* (38.3%), *Pseudomonas aeruginosa* (8.3%) and *Citrobacter* (1.6%), respectively. *Acinetobacter* sppes the most common pathogens isolated from patients with VAP had the highest resistance and susceptibility to gentamicin with 69.6% and to imipenem with 90.9%, respectively. Among the 60 patients with VAP in this study, at the end and after discharge from the hospital 11.7% full recovery, 18.3% partial recovery and 20% had no recovery and also 50% of whom were died.

Conclusion: Results indicated that the frequency of VAP is high in the ICU of hospital. Consequently, Observance of appropriate standards is recommended to prevent of VAP in the ICU of hospitals in each center, separately.

Key words: Pneumonia, Intensive Care Unit, Cross Infection, Antibacterial Drug Resistance, *Ventilator-Associated Pneumonia (VAP)*

Frequency of *Mycoplasma hominis* in Endocervical Specimens of Patients Referred to Qazvin Kowsar University Hospital in 2012-13

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Abstract

Background and objective: Because of clinical importance of *Mycoplasma hominis* especially in gynecology and difficulties related to diagnosis of this organism in our laboratories, it is essential to more accurately evaluation of the mentioned bacteria frequency in Iran. In this study the technique of culture and formulation of media have been designed in order to increasing the probability of bacterial isolation from the patient's clinical specimens favorably. Moreover, frequency of *Mycoplasma hominis* in the studied population and also relationship between presence of organism and clinical signs has been evaluated.

Materials and methods: This research was a descriptive epidemiological study which was performed on 226 patients referred to women clinic of Qazvin Kowsar hospital in 2012-13. The specimen was endo-cervical mucosa which was collected by dacron swabs. The swabs were initially placed in broth culture media and then maximum after 24 hours were transferred on agar plates. In this study observation of fried egg shaped colonies on the surface of agar culture media was considered as a positive culture and color change of broth media alone was reported as negative.

Results: Among the 226 specimens obtained form patient's cervical mucosa, 30 cases (13.2%) were positive for *Mycoplasma hominis* based on colony formation on agar media.

Conclusion: Frequency of *Mycoplasma hominis* in Qazvin is considerable and more investigations are necessary. The technique of culture and formulation of medium used in this study can improve sensitivity of the culture method.

Keywords: *Mycoplasma hominis*, vaginosis, infertility, abortion, PPLO.

Frequency of qnrA Gene among Fluoroquinolones Resistant E.coli Isolates from Urine of Imam Khomani hospital's patients

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Abstract

Back ground and objective: This study was done to determine the recent resistance rate of E.coli strains isolated from urinary tract infections of patients of Imam khomanin hospital to common antibiotics especially quinolons and screening the frequency of qnrA gene among them.

Materials and methods: During 6 months, 100 E.coli strains collected randomly from urine samples. All confirmed based on bacteriologic tests and their sensitivity to common antibiotics were determined based on CLSI 2011 protocol. Continuously, DNA extraction was done and frequency of qnrA gene was determined by PCR.

Results: Based on antibiogram, their resistant was 100% to amoxicillin and penicillin, 77% to amoxiclavate, 72% to ceftazidim, 69% to cephotaxim, 51% to ciprofloxacin, 47% to cefexim, 46% to ceftriaxone, 43% to cephalixin, 27% to axtreonam, 14% nalidixic acid and 2% to imipenem. Among 39.5% of E.coli isolated a 516bp band related to qnrA was detected by PCR.

Conclusion: Doing antibiogram in all clinical laboratories as a simple and cheap test before any antibiotic prescription especially quinolons to prevent drug resistant is recommended.

Key words: E.coli, Drug resistant, qnrA, PCR

Insecticidal and Repellency Properties of Eucalyptus sp. Essential Oil against *Supella longipalpa* (Dictyoptera: Blatellidae), An Important Vector of Tropical and Infectious Diseases, in Hospitals and Residential Areas

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Abstract

Background and objective: Due to environmental problems and public concerns arising from the use of chemical insecticides in the residential, safer alternative for urban pest controlling is considered seriously. So, the toxicity of essential oil of Eucalyptus sp. (Eucalyptus oil) was evaluated against the brown- banded cockroach, *Supella longipalpa* (F.) in the present study.

Materials and methods: For this evaluation continuous contact toxicity, fumigant toxicity and repellency test were applied against older nymph instars of the brown- banded cockroach.

Results: The results showed that Eucalyptus oil caused 100% mortality in the cockroach nymph population at concentrations higher than 5% after 24 h using continuous contact bioassay, while no mortality was observed in control. The concentration of 2.8% (LD₅₀) and 5.7% (LD₉₅) were need for killing 50% and 95% of nymph population at 24 h after contact exposure. The fumigation bioassay also caused 100% mortality of the nymph in less than 24h at concentration of 50 µl of pure essential oil per 1- lit glass jar. Eucalyptus essential oil resulted in different repellency values of the cockroach at different concentrations. The highest repellency occurred in the concentration of 5%, resulting in 49.5% of the cockroach repellency.

Conclusion: Compatibility of the Eucalyptus plant with the climate conditions of many areas of Iran including Khuzestan province, the essential oil of this plant can be considered as a potential alternative to control of the cockroach in an integrated management program.

Key words: Insecticidal, Repellency, Eucalyptus sp., Essential Oil, *Supella longipalpa* , Iran