

# Detection of *bla*<sub>TEM</sub> & *bla*<sub>SHV</sub> genes among clinical isolates of *E. coli* from Tehran hospitals

Shahcheraghi F\*<sup>1</sup>, Noveiri H<sup>2</sup>, Nasiri S<sup>1</sup>

1) Department of Microbiology, Pasteur Institute of Iran, Tehran

2) Islamic Azad University, Lahijan Branch, Lahijan

**Corresponding author:** Shahcheraghi F, Department of Microbiology, Pasteur Institute of Iran, Tehran, Iran  
Tel: +98(21)66405535 E-mail: feresh100@yahoo.com

## Abstract:

**Background and Objectives:** The pathogenic strains of *Escherichia coli* cause severe septicemia, urinary tract infection and wound sepsis. Resistance of this organism to the expanded-spectrum cephalosporins occurs via the production of extended-spectrum  $\beta$ -lactamases (ESBLs) such as TEM and SHV. These enzymes hydrolyze oxyiminocephalosporins (cefotaxime, ceftazidime) and monobactams (aztreonam). This study was conducted to determine the drug susceptibility and prevalence of ESBL phenotypes of *E. coli* isolates at Tehran hospitals.

**Material and Methods:** collectively, 200 isolates of *E. coli* were obtained from 5 hospitals in Tehran. The antibiotic susceptibility patterns of all clinical specimens were determined using disk diffusion method. Phenotypic confirmatory test was used to detect ESBL producing isolates. The MICs of ceftazidime and imipenem were determined using Microbroth dilution assay. Isolates with MIC $\geq$ 2 $\mu$ g/ml were screened by PCR to detect *bla*<sub>TEM</sub> and *bla*<sub>SHV</sub> genes.

**Results:** Resistance to ceftazidime and cefotaxime were 30.1% and 32.1% respectively. All isolates were susceptible to imipenem. 52.5% of them (n=105) were positive in phenotypic confirmatory test. Resistance to ciprofloxacin among ESBL positive strains was 41%. The *bla*<sub>TEM</sub> and *bla*<sub>SHV</sub> genes were found among 24% (n=48) and 6% (n=12) of isolates respectively. Six isolates (3%) contained both genes.

**Conclusion:** At Tehran hospitals, the rate of resistance to ceftazidime and prevalence of ESBL phenotype among the isolates of *E. coli* are high. It is necessary to seek a remedy for monitoring the ESBLs in these health settings. TEM is the dominant enzyme among the ESBL producing strains of *E. coli* in Iran.

**Keywords:** *E.coli*, antimicrobial resistant, *bla*<sub>TEM</sub>, *bla*<sub>SHV</sub>

# The prevalence and molecular characterization of vancomycin resistant gram positive cocci isolated from patients in Tehran

Eshraghi SS\*<sup>1</sup>, Talebi M<sup>1,2</sup>, Pourshafie M. R<sup>2</sup>, Salari MH<sup>1</sup>

1) Department of Pathobiology, School of Public Health, Medical Sciences/University of Tehran

2) Department of Bacteriology, Pasteur Institute of Iran, Tehran

**Corresponding author:** Eshraghi SS, Department of Pathobiology, School of Public Health, Medical Sciences/University of Tehran, Tehran, Iran E-mail: eshraghs@sina.tums.ac.ir/saeed\_eshraghi@yahoo.com  
Tel: 09126363134

## Abstract

**Background and Objectives:** Gram positive bacteria, particularly, *Staphylococcus aureus*, coagulase negative staphylococci and enterococci are of particular concern in hospitals. But there has been increasing concern about the development of vancomycin resistant enterococci and MRSA strains with reduced susceptibility to vancomycin over the last decade. Therefore, the present study was carried out to confirm the identification of vancomycin resistant gram positive cocci, to determine antibiotic resistance pattern and to study vancomycin resistance genes.

**Material and Methods:** The isolates from clinical samples were collected from hospitalized patients and outpatients in Tehran. Gram positive cocci species identification was performed by using conventional tests and PCR using specific primers. VRE isolates were subjected to antibiotic susceptibility testing, MICs of vancomycin were determined by the E-test method. Determination of vancomycin resistance genes, *vanA* and *vanB* were performed with PCR. Confirmation of transposons was performed with specific primers for *vanS*.

**Results:** Out of 1030 gram positive isolates, none of the staphylococci or streptococci isolates were resistant to vancomycin. Most of vancomycin resistant isolates in this study were VRE. *faecium* (96%) and harbored *vanA*. All of the isolates were positive for *vanS* the conserved fragment of transposon and carried the identical digestion pattern like type strain.

**Conclusion:** According to the results of this study, all of the vancomycin resistant isolates were enterococcus spp. Vancomycin resistant enterococci itself is now a major and largely untreatable infection, and can pass the vancomycin resistance genes to the other highly virulent gram positive cocci.

**Keywords:** Vancomycin, Gram positive cocci, Molecular characteristics, E-test

# **Cytolethal distending toxin (CDT) produced by *Campylobacter jejuni* and *Campylobacter coli* isolated from chickens by tissue culture method in Isfahan**

Havaei SA\* , Pishva E, Tabibian A, Rabani M, Haghshenas F, Narimani T

Department of Microbiology, School of Medicine, Isfahan university of Medical Sciences, Isfahan

**Corresponding author:** Havaei SA, Department of Microbiology, School of Medicine, Isfahan university of Medical Sciences, Isfahan, Iran. Mobile: 09133133539 E-mail: havaei@med.mui.ac.ir

## **Abstract**

**Background and Objectives:** *Campylobacter jejuni* is one of the most common bacterial cause of diarrheal disease in humans throughout the world.

Contamination is mainly linked to the consumption of undercooked food products contaminated with *Campylobacters*. The most characterized toxin proposed is CDT, which has been detected in several *Campylobacter* species. With regard to the role of broiler chickens in transmission of *Campylobacter* to human and the possible role of CDT in the pathogenesis of *Campylobacter*, detection of *Campylobacter* producing CDT is necessary .

**Material and Methods:** In this study 368 rectal swabs were collected from chickens . All the specimens were cultured on Skirrows & Blood agar and incubated in microaerophilic conditions at 42° C for 48-72 h . Hella cell was applied to detect CDT in *C.jejuni* and *coli*.

**Results :** *Campylobacter* strains were isolated from 114 (31%) of 368 chicken (101 *C. jejuni* and 13 *C. coli*). Toxin production in *C. jejuni* and *C. coli* was 94% and 76.9 % respectively.

**Conclusion:** It seems that the majority of *C.jejuni* and *C.coli* produce CDT although *C. jejuni* produces a higher titer.

**Keywords:** *Campylobacter jejuni* , *Campylobacter coli* , Cytolethal distending toxin

# Determine the inducible resistance phenotype in methicillin resistance *staphylococcus aureus* and coagulase negative staphylococci

Naderinasab M<sup>\*1,2</sup>, Yousefi F<sup>1,2</sup>, Farshadzadeh Z<sup>1,2</sup>, Sasan M<sup>2</sup>

- 1) Research center of Bouali and Research laboratory of Microbiology and Virology, Mashhad University of Medical Sciences
- 2) Imam Reza Hospital

**Corresponding author:** Naderinasab M, Research center of Bouali and Research laboratory of Microbiology and Virology, Mashhad University of Medical Sciences, Mashhad, Iran Tel: +98(511)8022205-6 Mobile: 09151164627 E-mail: mnaderinasab@yahoo.com

## Abstract:

**Background and Objectives:** Macrolide, lincosamide and streptogramin B (MLS<sub>B</sub>) antimicrobial agents are widely used in the treatment of staphylococcal infection. Clindamycin is the medicine of choice for some staphylococcal infections, particularly skin and soft tissues infections. Erythromycin and clindamycin are two distinct classes of antimicrobial agents which inhibit protein synthesis in bacterial cells. Inducible resistance to clindamycin is not diagnosed using conventional antibiotic susceptibility testing and most of the physicians do not prescribe clindamycin in cases where isolates show resistance to erythromycin. However, not all of the erythromycin resistant strains are resistant to clindamycin. To detect co-resistance to both antibiotics, the inducible test should be performed to determine the potency of clindamycin for treatment. The aim of this study was to detect inducible clindamycin resistant isolates of methicillin resistant isolates of *Staphylococcus aureus* and coagulase negative staphylococci.

**Material and Methods:** The inducible test was performed by disk diffusion, placing an erythromycin disk adjacent to a clindamycin disk on Muller Hinton agar plate. If the isolates were resistant to erythromycin and this resistance was induced to clindamycin an inhibition zone shaped like the letter D was produced. In this study all methicillin resistance *Staphylococcus aureus* and coagulase negative staphylococci were tested for induced resistance.

**Results:** Of 128 isolates of Staphylococci, 6 were D and 1 was D<sup>+</sup>.

**Conclusion:** The inducible test correctly identified the inducible resistance to clindamycin caused by erythromycin. The resistance to clindamycin was not induced by erythromycin in the majority of isolates of staphylococci in our collection of isolates. We recommend the test routinely be used for correct determination of resistance to clindamycin.

**Keywords:** inducible test, erythromycin, clindamycin, *Staphylococcus aureus*, coagulase negative staphylococci.

# Isolation of carbapenem resistant *Acinetobacter baumannii* (CRAB) strains from patients and equipments of Intensive care units (ICUs) at Qazvin between 2005-2006.

Khosroshahi N\*, Sharifi M

Department of Microbiology, School of Medicine, Qazvin University of Medical Sciences

**Corresponding author:** Khosroshahi N, Department of Microbiology, School of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran Tel: +98(281)3336001-6 Mobile: 09125819521  
E-mail: naderkhosroshahi@yahoo.com

## Abstract:

**Background and Objectives:** *Acinetobacter* spp. are gram negative aerobic bacteria that grow easily on routine bacterial culture media. The carbapenem resistant *Acinetobacter baumannii* was firstly recognized as causative of nosocomial infection outbreak in 1991 and reported from different countries sine then. We designed this study to determine the prevalence of carbapenem resistant isolates of *Acinetobacter baumannii* from patients and equipments at intensive care units (ICUs) of Qazvin University hospitals.

**Material and methods:** During November 2005 to October 2006, 400 samples were collected from patients and equipments of ICUs of University hospitals in Qazvin. The specimens were cultured on MacConkey agar and isolated bacteria were identified using conventional bacteriological methods. Carbapenem resistant isolates were detected using disk containing imipenem in Kerby Bauer method.

**Results:** Of 400 samples cultured from ICUs, 15 (3.15%) yielded *A. baumannii*. A total of 4 isolates (26.6%) were resistant to imipenem (CRAB).

**Conclusion:** *Acinetobacter baumannii* can be isolated from patients and equipments in ICUs of Qazvin University hospitals. The rate of carbapenem resistance is high among isolated strains.

**Keywords:** *Acinetobacter baumannii*, Drug resistance, carbapenem, ICU, Patient

# Frequency of enterohaemorrhagic *Escherichia coli* isolated from patients with acute diarrhea in Tabriz hospitals

Nahaei MR <sup>\*1</sup>, Akbari Dibavar M <sup>1</sup>, Sadeghi J <sup>1</sup>, Nikvash S <sup>2</sup>

1) Department of Microbiology, School of Medicine & Drug Applied Research Center, Tabriz University of Medical Sciences

2) Microbiology Laboratory, Children Hospital, Tabriz University of Medical Sciences

**Corresponding author:** Nahaei MR, Department of Microbiology, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran. Tel: +98(411)3364661 E-mail: nahaeimr@yahoo.com

## Abstract

**Background & Objectives:** Diarrhea is a major cause of morbidity in all age groups worldwide. Bacteria can cause 24% of infectious diarrhea which accounts for 70% mortality in affected children of <5 years old. Among the bacterial agents *Salmonella spp*, enteropathogenic *E. coli*, *Campylobacter spp*, *Shigella spp* and clostridia are the main causes of diarrhea. *Escherichia coli* O157 is an emerging cause of foodborne illness that presents with acute diarrhea. It transmits through the contaminated water, direct or indirect contact with animals and also through person to person contact.

In addition to diarrhea, 2-7% of the patients infected with enterohemorrhagic *E. coli* (EHEC) will possibly develop haemolytic uremic syndrome (HUS) or acute renal failure. This study was conducted to determine the frequency of enteric pathogens with special reference to enterohaemorrhagic *E. coli* O157.

**Material and Methods:** A total of 1020 fecal specimens were collected from patients with acute diarrhea in Imam Khomeini and Children hospital of Tabriz. Direct examination was carried out for leukocytes, erythrocytes, parasite ova and trophozoites by wet mount preparation and the specimens also were cultured in selective and differential culture media for pathogenic bacteria. *E. coli* isolates were further typed using specific antisera and EHEC isolates were subjected to susceptibility testing against routinely used antibiotics.

**Results:** *Entamoeba histolytica* and *Giardia lamblia* were detected in 91(8.9%) and 51(5%) of cases. Pathogenic enteric bacteria were also isolated and recorded as *E. coli* O157 (n=6, 0.58%), *E. coli* O111 (n=15, 1.47%), *E. coli* O26 (n=13, 1.27%), *Campylobacter jejuni* (n=35, 3.4%), *Salmonella spp.* (n=177, 17.3%) and *Shigella spp* (9.5%). All EHEC isolates were recovered from children <5 years old. In serological tests, 139 (13.5%) isolates of *E. coli* showed autoagglutination, which suggests their probable dependence to EAEC (enteroaggregative *E. coli*). Based on information collected from the EHEC positive patients' files, no sign of anemia or kidney disorder was detected.

**Conclusion:** Enteropathogenic *E. coli* isolates are not usually tested in most of the routine diagnostic laboratories, so these medically important bacteria remain undiscovered, unless in an epidemic situation. Our findings of 3.3% enterohaemorrhagic *E. coli* and the presence of 0.58% *E. coli* O157 shows less frequency for these pathogenic bacteria and are in accordance with reports from other countries.

**Key words:** Enterohaemorrhagic *E. coli*, *E. coli* O157, Diarrhea.

# Improved Diagnosis of *Brucella* in human serum samples by double PCR assay

Hedayati MH<sup>\*1</sup>, Adli Moghaddam A<sup>2</sup>, Norouzian D<sup>2</sup>, Tabaraie B<sup>2</sup>, Ahmadi H<sup>2</sup>, Siadat SD<sup>2</sup>

- 1) Department of Quality Control, Research and Production Complex of Karaj, Pasteur Institute of Iran
- 2) Department of Bacterial Vaccine and Antigen Production, Research and Production Complex of Karaj, Pasteur Institute of Iran

**Corresponding author:** Hedayati MH, Department of Quality Control, Research and Production Complex of Karaj, Pasteur Institute of Iran, Karaj, Iran Tel: +98(261)6101641 E-mail: mhheda@yahoo.com

## Abstract

**Background and Objectives:** *Brucellae* are gram-negative intracellular pathogens which cause zoonotic disease in humans. Clinical manifestations of brucellosis in human are variable and often are non-specific, and the diagnosis requires fast and accurate confirmation. Since the use of serum instead of whole-blood samples offers several advantages for nucleic acid amplification methods, in this study we developed an improved PCR assay for the rapid and specific laboratory diagnosis of human brucellosis directly from serum specimens.

**Material and Methods:** DNA was extracted from 100  $\mu$ L of serum from 30 patients with acute serologic brucellosis. The PCR reaction was carried out with Specific primers. Second PCR reaction for reamplification of the first reaction products was designed.

**Results:** a 223 bp conserved region on the sequence encoding the 31-KDa immunogenic outer membrane protein which is specific to the genus *Brucella* (BCSP31) and present in all its biovars was amplified in all serum samples.

**Conclusion:** For confirmation and efficient amplification of the specific target, reamplification of the first PCR products had a sharper banding patterns with high sensitivity and specificity that might be considered as a new useful method for diagnosis of human brucellosis in serum specimens.

**Keywords:** *Brucella*, Brucellosis, PCR, BCSP31

# Seroepidemiology of HIV, syphilis, Hepatitis B and C in intravenous drug users at Loghman Hakim hospital

Aminzadeh Z\*, Aghazadeh Sarhangi K

Loghman Hakim Hospital, Shaheed Beheshti University of Medical Sciences

**Corresponding author:** Aminzadeh Z, Loghman Hakim Hospital, Shaheed Beheshti University of Medical Sciences  
Tel: +98(21)55411717 E-mail: zohrehaminzadeh@yahoo.com

## **Abstract:**

**Background and Objectives:** Intravenous drug using is a main risk factor for getting infected with HIV, Hepatitis B and C viruses. The syphilis is a common infection. The aim of this study was to investigate the seroepidemiology of HIV, syphilis, hepatitis B and C among the intravenous drug users (IDUs) at Loghman Hakim hospital, Tehran.

**Materials & Methods:** A descriptive (cross- sectional) study with observative-interview technique was conducted. 70 admitted IDUs patients in Loghman Hakim hospital during July- December 2007 were included in this study. The patients with mean of age 34.4+/- 9.6 and mean of oral drug 66.15+/- 82.5 months, mean of intravenous drug 48.94+/-48.46 months , mean of inhalation drug 87.05+/- 84.14 months were studied.

**Results:** 74.5% of the patients had been in prison and 11.5% of them shared syringe. The positive results obtained for the serological tests of 70 patients were in the following order: Anti- HCV (36%), Anti-HIV (30%), HBsAb (11.5%) and HBsAg ( 6%). None of the patients was positive in RPR test. There was no significant correlations between the routes of using drug, history in prison and results of serology. Importantly, a significant correlation was found between the sharing syringe and positivity for Anti-HCV by itself or co-infection of HCV with HIV.

**Conclusion:** HCV is the most common infection among the intravenous drug users followed by HIV and Hepatitis B. A lack of RPR shows infection with syphilis is under control.

**Keywords:** HIV, Hepatitis C, Hepatitis B, Syphilis