EuroSciCon

8th Edition of International Conference on

Antibiotics, Antimicrobials & Resistance

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Theme: Exploring the recent advancements & its applications of antibiotics

Abstract

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EFdA: An extremely excellent anti-HIV nucleoside-From design to the current clinical trial results

Hiroshi Ohrui
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EFdA(4'-C-ethynyl-2-fluoro-2'-deoxyadenosine) prevents the emergence of resistant HIV mutants, is over 400 times more active than AZT and several orders of magnitude more active than other clinical reverse-transcriptase inhibitory 2',3'-dideoxynucleoside drugs, very low toxic, very long acting, and very useful for prophylaxis. EFdA is now under clinical investigation by Merck & Co. as MK-8591.In the beginning, a general idea for the development of anti-viral modified nucleosides is presented. Next, the development of EFdA is discussed and then the current clinical trial results by Merck will be presented. For the development of EFdA, four working hypotheses, (1) the way to prevent the emergence of resistant HIV mutants, (2) the way to decrease the toxicity of nucleosides, (3) the way to provide nucleoside with stability for long acting, (4) the difference of the substrate selectivity between human and viral nucleic acid polymerases makes it possible to develop very excellent anti-viral modified nucleosides, were proposed. 4'-C-substituted-2'-deoxy nucleoside (4'SdN) was designed as the nucleoside which could satisfy these hypotheses. The study on 4'SdN has successfully resulted in the development of EFdA.

Evaluation of the potency of some antibiotic formulations in the Egyptian market

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The steadily increasing in bacterial resistance to existing antimicrobial drugs is a serious problem, and therefore there is a dire need to search for new approaches of bacterial treatment. The use of antibiotics alone sometimes does not produce the effective inhibitory action. To overcome this problem, a combination of drugs often used. One approach to treat infectious diseases is the use of combination of antibiotics together or with plant extracts. Combination therapy is helpful and useful for patients with serious infections caused by drug resistant pathogens. Seven classes of antibiotics were purchased from local pharmacy (gentamicin, ceftazidime, ciprofloxacin, doxycycline, amoxycillin, ceftriaxone, and azithromycin). MICs were calculated and different antimicrobial combinations were studied on 20 clinical isolates (10 S. aureus and 10 P. aeruginosa). Also, the antibacterial activity of limonene, rosemary, salvia, thymol, thymus, capsicum, black pipper, moringa seed, curcumin and chitosan were detected against S. aureus and P. aeruginosa using broth microdilution method.

In vitro antagonistic combinatory effect of palm oils rich in lauric acid with oxacillin towards *staphylococcus aureus*

Klara Lalouckova
Institute of Animal Science, Czech Republic

Interactions of antibiotics with natural compounds are in case of synergy a promising source of new antimicrobials in terms of combating antibacterial resistance. On the other hand, their antagonistic interactions especially with food and feed are undesirable and potentially dangerous. Palm oils are heterogeneous substances occurring naturally e.g. in breast milk and can be routinely found in daily diet of both humans and animals. Therefore, the aim of our study was to evaluate possible interactions between palm oils (Astrocaryum vulgare - tucuma, Cocos nucifera - coconut, and Elaeis guineensis – palm oil) containing medium chain fatty acids (prevalence of lauric acid; C12:0) and oxacillin towards methicillin-sensitive and resistant strains of Staphylococcus aureus by checkerboard method in vitro. Firstly, fractional inhibitory concentration (FICs) of three above mentioned palm oils in combination with oxacillin against three S. aureus strains were tested. Following findings of gas chromatography, susceptibility to combinations of lauric acid and oxacillin was tested towards ten strains of S. aureus. It has been proven, that palm oils and lauric acid alone posse antistaphylococcal properties (minimum inhibitory concentrations – MICs = 240 – 512 µg/mL and 242 – 256 µg/mL, respectively). Interesting results were found during the testing of combinatory effect. All three palm oils and lauric acid in higher concentrations (1024 – 2048 µg/mL) induced antagonistic interactions (FIC ≥ 4) with effective concentrations of oxacillin; FICs in range 4.02 – 8.56 for palm oils and 4.01 – 4.28 for lauric acid. To best of our knowledge, this is the first case of observed antagonistic interactions between palm oils and lauric acid with oxacillin. Such an antagonism induced by quite common combination of foodstuff with antibiotic is of serious concern and should be avoided.This study was supported by the project of the Ministry of Agriculture of the Czech Republic No. MZe-RO0719.This study was supported by the project of the Ministry of Agriculture of the Czech Republic No. MZe-RO0719.

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Abstract

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Comparison of phenotypic and genotypic methods for the detection of carbapenemase producing *Enterobacteriaceae* in Hungary

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Infections caused by carbapenem-resistant Enterobacteriaceae (CRE) are an emerging global public health threat, leaving clinicians with few treatment options available. For infection control and public health purposes, the differentiation of carbapenemase-producers (CP-CRE) is essential, because these resistance determinants are readily transferable. The diversity of carbapenemase enzymes and their co-occurrence with other resistance mechanisms affecting susceptibility to β-lactam antibiotics (AmpC, ESBLs, porin loss) often makes detection of these organisms in routine diagnostic laboratories difficult; clinical laboratories often assess suitability of these methods based on hands-on time and price. The aim of our study was to assess various phenotypic and genotypic methods for the detection and confirmation of carbapenemase-producing Enterobacteriaceae in a low-prevalence country. Fifty strains from our culture collection (obtained between 2014-2017) were included in the study, based on the screening criteria recommended by ESCMID (meropenem disk diameter <28 mm). The following phenotypic methods were used:modified cloverleaf (Hodge) test (MHT), modified carbapenem inactivation method (mCIM) and chromID CARBA SMART agar (bioMérieux).The presence of carbapenemase- and extended spectrum beta-lactamase (ESBL) encoding genes were detected using PCR, followed by sequencing. Production of AmpC-β-lactamases was verified using AmpC Detection Disk Set (Mast Diagnostics). Carbapenemase genes were detected in 18 isolates (2 blaNDM, 5blaOXA-48-like, 10blaVIM and 1 blaVIM and blaOXA-48-like co-producer), nine of these isolates were carbapenemase/ESBL (mainly blaCTX-M) co-producers, 15 isolates were inducible AmpC β-lactamase-producers, 12 isolates were ESBL-positive, while in 5 isolates, none of the above could be verified. Sensitivity/specificity of the modified Hodge-test, CARBA SMART agar and mCIM test was 85.7%/80%, 95%/100% and 100%/100%, respectively. Based on our results, the use of modified Hodge-test is not recommended due to its poor specificity, while chromogenic media (easy to use) and mCIM (panels can be prepared in-house) offer viable options for the detection and confirmation of carbapenemase-producing Enterobacteriaceae for routine laboratories.

Policy advocacy and implementation rather than communication, education and training; is the effective antidote for curtailing the amr proliferation

Jude Okiria
Makerere University

Background: The Global Action Plan on Antimicrobial Resistance (AMR) adopted by all countries in 2015 through decisions in the World Health Assembly, the FAO Governing Conference and the World Assembly of OIE Delegates states in its Objective 1 that; Improvement in the awareness and understanding of AMR through effective communication, education and training is key. Notably, Social Mobilisation, Advocacy and Emergency/Risk Communication have proven to be very effective tools in combating emerging diseases outbreaks when deployed against the backdrop of One-Health strategy.

Problem statement: Promoting public awareness and understanding on antimicrobial use, resistance prevention, and containment through effective communication and training cannot help us control the spread of resistant organisms if we don't aggressively engage policy advocacy and policy implementationoversight.

Method: Meetings, KABP study, Interviews/Rapid or Participatory assessments and FGDs on related policies or plans targeting the policy makers, our internal and external publics, pharmacists, and prescribers, explicating how their decisions affect us all.

Justification: To create an understanding of the relevance of communication for global health and how it is measured/ evaluated.

Conclusion: We need to re-focus our communication approaches to the area of advocacy for Policy change and actual implementation and not just information dissemination; which is what communication, education and training is. Advocacy for bio-security risk management and training, waste segregation, One-Health mainstreaming, routine hospital facility based audits, bio-safety planning, establishment of bio-safety officers, risk mapping for hot spots and entry points, establishment of human and animal case management facilities, streamlining membership and the practice of risk communication, advocacy and social mobilisation is necessary.

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The purpose of temperature of fever

K M Yacob
Marma Heatth Centre

When the disease becomes threat to life or organs blood circulation decreases, Temperature of fever will emerges to increase prevailing blood circulation. And it acts as a protective covering of the body to sustain life. When blood flow decrease to brain, the patient becomes fainted-delirious .If we try to decreases temperature of fever, the blood circulation will further reduced. Blood circulation never increases without temperature increase. Delirious can never be cured without increase in blood circulation.The temperature of fever is not a surplus temperature or it is not to be eliminated from the body. During fever, our body temperature increases like a brooding hen`s increased body temperature.The actual treatment to fever is to increase blood circulation.Two ways to increase blood circulation. 1. Never allow body temperature to lose 2. Apply heat from outside to the body. When the temperature produced by body due to fever and heat which we applied on the body combines together, the blood circulation increases.Then body will stop to produce heat to increase blood circulation. And body will get extra heat from outside without any usage of energy.

Method of additive modernization of preservation solutions that improved the quality, efficiency and safety transfusion of RBCs

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This study was devoted to the learning of the use of nanotechnology to correct the functional activity of red blood cells (RBCs) at the storage stages at a positive temperature. It was established that saline NaCl, which had previously been processed by magnetite nanoparticles (ICNB) had a marked membrane-stabilizing effect, inhibits hemolysis and increasing the sedimentation stability of preserved RBCs. The complex analysis of the obtained data allowed to determine the primary mechanisms effect of the saline NaCl, which had previously been processed by ICNB on the preserved RBCs. The proposed method of additive modernization of preserved RBCs was adapted to the production process. The optimization results were obtained in creating a simple and practical method of additive modernization of preservation solutions that does not violate the compliance requirements, improves the quality, efficiency and safety transfusion of RBCs.

Evaluation of urea/thiourea derivatives as novel antimicrobial agents and quorum sensing inhibitors: an *in vitro* and *in silico* study

Márió Gajdács
University of Szeged

The emergence and spread of antimicrobial resistance, together with the lack of newly developed drugs to treat these infections present a serious public health issue worldwide. Apart from bacteria that do not respond to antibiotics, therapy-resistant fungal strains introduce additional difficulties. Novel antimicrobial compounds containing chalcogens (S, Se, Te) have attracted reasonable attention. The antimicrobial activity of 10 tested compounds against reference strains of various aerobic, strict anaerobic bacteria and yeasts was evaluated using broth microdilution method, according to EUCAST standards. A MIC reduction assay was performed to quantify the effects of (thio)ureas on the minimum inhibitory concentrations of antibiotics. The activity of tested compounds on quorum sensing (QS) was evaluated using sensor strains Chromobacterium violaceum CV026, Serratia marcescens AS-1 and the N-acylhomoserine lactone (AHL) producer Enterobacter cloacae 31298. The toxicity of the tested compounds was assessed on murine (NIH/3T3) and human (MRC-5) fibroblast cell lines using MTT method. The predicted physico-chemical and pharmacokinetic properties of the compounds were determined in silico, using OSIRIS Molecular Property Explorer and PreADMET 2.0 software. The ureas/thioureas did not show antibacterial activity against the aerobic and anaerobic bacteria, nor did they inhibit the growth of the fungal strains in our study (MICs of the tested compounds were >200 μM). Some of the compounds presented modest adjuvant properties, reducing the inhibitory concentrations of antibiotics by 50-75% against susceptible strains; however, they did not influence the MICs of reference drugs against MDR bacteria. The benzyl- and 4-methoxyphenyl-substituted thioureas had promising QS-inhibitory effects. None of the compounds had any cytotoxic effects on the tested cell lines. All tested compounds complied with Lipinsky's Rule of Five and the predicted percentages of intestinal absorption are excellent (≥ 95%) for all the respective compounds. Some of the tested (thio)ureas showed potent and selective QS-inhibitory activity, without affecting the viability of bacterial or mammalian cells. The predicted ADME properties of the compounds are of the highest standard for drug development. The synthesis and biological evaluation of novel derivatives in the future could introduce alternative antimicrobial drugs.

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E-BABE: The hidden relation, clues of autism, ADHD and depression which reveals the effective cause and cure

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Observing the facts: they lack social skills, they cannot talk: language is the product of living environment - native language; we speak it naturally without thinking at all. We are not born with our native language, so I doubt their connection with their living environment and the state of mind that they cannot learn. Testing them with Aesop fables, metaphors, pretending game - they do not understand these as normal kids; and they are poor in interacting, communicating or persuading. They are in the low level of this. For official test: you can test them with EQ test. All these low-level vital skills make them never feel safe, connection to the environment: it makes them stress. Over time, it makes the downward spirals that make them more and more lack of social skills and suffer more stress.Poor in EQ: autistic kids do not understand fable and metaphors. Genes cannot make them poor in EQ, and cognitive thinking. Trainers know any skill can be learned with just basic supports.all in one, one in all:As therapists: Neurologist, psychiatrist, sociologist, gastroenterologist, urologist, educators, sleep therapists, cardiologist, language therapists, educators, trainers and teachers, we should remember there is no separation in the health of heart, stomach, muscle, cognitive thinking, sleeping, hormone system: all are interdependent and under the state of mind.

Early MRI-negative posterior circulation stroke presenting as acute dizziness

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Objective: To determine the frequency, clinical and radiological features, and efficacy of clinical evaluation and perfusion-weighted imaging (PWI) for the prediction of final stroke in patients with DWI/MRI-negative posterior circulation stroke (PCS) presenting acute dizziness/vertigo. Methods: From our comprehensive prospective stroke registry of acute ischemic stroke during a 7-year period, we identified 1,846 consecutive patients with PCS, 850 of whom presented with acute dizziness/vertigo. Results: Of these 850 patients, initial DWI-MRI was negative in 35 (4.1%). In these 35 patients, dizziness/vertigo was acute prolonged in 31 and recurrent transient in 4. Focal neurological signs or profound imbalance were present in 16/35 or 18/34, respectively. Spontaneous nystagmus was absent in 21/35; the HINTS protocol (head impulse, nystagmus, and test-of-skew) was not applicable to them. In 12/26 patients, PWI was positive and the same time as DWI was negative. The usual site of lesion was the lateral medulla (n=18). Twenty-nine patients (83%) had small strokes, while 19 (54%) had large vessel strokes. The sensitivity of systematic clinical evaluation adopting neurological examination, HINTS plus, and assessment of equilibrium was 83%, for prediction of final stroke and 100% when combined with PWI.

In Vitro Antagonistic Combinatory Effect of Palm Oils Rich in Lauric Acid With Oxacillin Towards Staphylococcus aureus

Eva Skrivanova
Institute of Animal Science, Czech Republic

Interactions of antibiotics with natural compounds are in case of synergy a promising source of new antimicrobials in terms of combating antibacterial resistance. On the other hand, their antagonistic interactions especially with food and feed are undesirable and potentially dangerous. Palm oils are heterogeneous substances occurring naturally e.g. in breast milk and can be routinely found in daily diet of both humans and animals. Therefore, the aim of our study was to evaluate possible interactions between palm oils (Astrocaryum vulgare - tucuma, Cocos nucifera - coconut, and Elaeis guineensis – palm oil) containing medium chain fatty acids (prevalence of lauric acid; C12:0) and oxacillin towards methicillin-sensitive and resistant strains of Staphylococcus aureus by checkerboard method in vitro. Firstly, fractional inhibitory concentration (FICs) of three above mentioned palm oils in combination with oxacillin against three S. aureus strains were tested. Following findings of gas chromatography, susceptibility to combinations of lauric acid and oxacillin was tested towards ten strains of S. aureus. It has been proven, that palm oils and lauric acid alone posse antistaphylococcal properties (minimum inhibitory concentrations – MICs = 240 – 512 µg/mL and 242 – 256 µg/mL, respectively). Interesting results were found during the testing of combinatory effect. All three palm oils and lauric acid in higher concentrations (1024 – 2048 µg/mL) induced antagonistic interactions (FIC ≥ 4) with effective concentrations of oxacillin; FICs in range 4.02 – 8.56 for palm oils and 4.01 – 4.28 for lauric acid. To best of our knowledge, this is the first case of observed antagonistic interactions between palm oils and lauric acid with oxacillin. Such an antagonism induced by quite common combination of foodstuff with antibiotic is of serious concern and should be avoided.This study was supported by the project of the Ministry of Agriculture of the Czech Republic No. MZe-RO0719.

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Rise of multidrug-resistant bacteria in global water: heterogeneous phyto-antibiotics, phage therapy and ganga action plan may be the best hope for india tackling superbug spread

Asit Kumar Chakraborty
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Life forms change with environment and microbes are now multidrug-resistant due to high doses antibiotic use. Antibiotic dark age as was before 1928 seems to re-appear again in 2018. We have demonstrated to use heterogenous phyto-antibiotics (MDR-Cure) to combat superbugs as used by ancient herbalers and structure-function of active principle is available today through the use of HPLC, NMR, and FT-IR technologies. Kolkata Ganga River has polluted with MDR bacteria and mdr genes like beta-lactamases (blaCTX-M, blaOXA and blaNDM-1), acetyl-, phospho- and adenyl- transferases (aacC1/A2, aphA4, aadA2) as well as mcr, tet, acr and mex types drug efflux genes including vanA gene cluster, penA, sul1/2/3, pncA, dhfr and mcr-1 genes. About 40% bacteria are ampicillin resistant including 0.02% resistant to advanced drug derivatives like imipenem, colistin, amikacin, linezolid, vancomycin, ceftriaxone and lomofloxacin. Ganga Action Plan has initiated by Indian Government with estimated >40000 crores when all industrial and domestic effluents will be treated before reach river. However, no action plan on MDR bacteria contamination and many Indian still drink raw Ganga River water in religious occasions and bath in Allahabad Sangam. MDR bacteria are created and transmitted to save 2x1012 diverse species of gut microbiota that synthesize 20 vitamins and bio-molecules absolutely needed for human metabolosome. It has been suggested that LPS, vitamins and butyrate from intestinal bacteria activate luminal cells to secrete interleukins and cytokines that might orchestrated to synthesis diversified mdr genes in conjugative plasmids. Indian medicinal plants like Suregada multiflora and Cassia fistula will give a new dimension to combat MDR pathogenesis due to advancement in agriculture and tissue culture. Phage therapy is in advanced mode for FDA approval and we have detected less lytic phages in Ganga River water. WHO has issued Action Plan and G-20 Leaders and Scientists are together for superbug control.

Knowledge level and attitudes of Hungarian and International medical students related to antimicrobial use and resistance: A cross-sectional, comparative single-center survey

Márió Gajdács
University of Szeged

The prevention, diagnosis and treatment of infectious diseases is the everyday task of any physician, which is not feasible without the adequate competency level. Based on WHO projections, the mortality attributed to infectious agents (especially MDR pathogens) may surpass the mortality of malignant diseases by 2050, therefore now more than ever, the appropriate training and attitude of young healthcare professionals is of utmost importance. A self-administered questionnaire-based study was performed during practical classes of 2nd to 5th year medical students enrolled in the Hungarian and International training programme at the University of Szeged. The questionnaire included 30 questions related to infectious diseases and antimicrobial use, devised by specialists. An attitude score (0-7) was determined based on responses to specific questions. Data collection has been running since February 2017. Statistical analyses were performed by IBM SPSS 24.0. The 796 respondents (513 Hungarian students, 283 International) were polled 62.53% female, with an average age of 23.89±1.84 and 24.18±3.41 years, respectively. 54.59% was satisfied with their academic progress, and 22.96% was involved in undergraduate research. 57.76% were aware of the medical field they would like to specialize in (mainly students in the clinical module $p<0.001$), only 0.62% was interested in CM/ID. Based on the number of correct answers, 3rd and 4th year Hungarian students tend to perform better ($p<0.001$), while each grade showed significantly better results than the previous one ($p<0.001$), irrespective of training programme. Overall, 30.94% of the 2nd year students had zero correct answers. While Hungarian students predominantly presented with high (5-7) attitude scores (82.35-99.17%), the performance of International students (37.27-70.31%) was variable. There was significant association between attitude scores and the number of correct answers ($p<0.001$) in both student groups. The gradient of change in knowledge level is clear, however, 56.25% of Hungarian students and 36.21% International students in the clinical module had a below par (<50% correct answers) performance. Our results suggest the need for the implementation of case-based teaching methods and curriculum improvement. The students of the International program may be affected by a language barrier, especially regarding the terminology of this field.

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Human papillomavirus infection in genital women in four regions of Senegal

El Hadji Seydou Mbaye
El Hadji Seydou Mbaye

Introduction: Cervical cancer is the most frequent cancer among women in Senegal. However, there are few data concerning the HPV types inducing neoplasia and cervical cancers and their prevalence, in the general population of Senegal

Aim: The aim of this study is to determine the prevalence of HPV infection in Senegalese women aged from 18 years and older.

Materials And Methods: A study was performed on 498 cervix samples collected from healthy women aged 18 and older in Dakar. 438 other samples were collected from three other regions, Thiès, Saint Louis and Louga. The samples were screened for 21 HPV genotypes using an HPV type-specific E7 PCR bead-based multiplex genotyping assay (TS-MPG) which is a laboratory-developed method for the detection of HPV.

Results: The prevalence for pHR/HR-HPV in the region of Dakar was 20.68%. HPV 52 (3.21%) was the most prevalent HPV type, followed by HPV 16 (3.01%) and HPV 31 (3.01%). In the regions of Thiès, Louga and Saint Louis, the prevalence for pHR/HR-HPV was 29.19%, 23.15% and 20%, respectively

Conclusion: The study revealed the specificity of the HR-HPV prevalence in Dakar and other regions of Senegal. The patterns differs from the one observed in the other regions of the world and rise the issue of the development of vaccination program in the country. Such a program should take into account the real HPV prevalence for an effective protection of HPV-associated diseases.

Susceptibility of microorganisms isolated from otitis media pus to cigarette capsule and some medicinal plants

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Otitis media is a perforation of the tympanic membrane with persistent drainage of pus from the middle ear and it is a major cause of acquired hearing impairment of varying severity mostly in developing countries. This study aimed to identify bacterial isolates in patients who have otitis media and to determine their susceptibility pattern to cigarette capsule as well as testing the antimicrobial effect of some medicinal plants extract (Nicotiana tobacum, Annona senegalensis, and Zornia glochidiata) on the isolates. A total of 48 samples were collected from the laboratories of three Public Hospitals, males 28 (58.33%) and Females 20 (41.67%) with highest occurrence in children below the age of 5 years (60%) followed by 5-9 years to be (31.11%). Minimum Inhibitory and Minimum Bactericidal concentrations of the extract were carried out. Percentage of Gram negative organisms isolated was 57.78% while 42.22% are Gram positive. The bacterial isolates identified were Klebsiella pneumonia, Pseudomonas aeruginosa, Staphylococcus aureus, Streptococcus pneumoniae and Proteus mirabilis. The two cigarette capsules used (Rotmass and Benson) showed significant ($P < 0.05$) zones of inhibition on Pseudomonas aeruginosa and streptococcus pneumoniae. Results also revealed that the three medicinal plant extracts (Nicotiana tobacum, Annona senegalensis, Zornia glochidiata) showed significant ($P < 0.05$) zones of inhibition on Klebsiella pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa, Staphylococcus aureus and streptococcus pneumoniae at 0.5 mg, 1.0mg and 2.0mg respectively. This research shows the promise some plants have for discovery of new classes of antibiotics which might be used in the treatment of otitis media infection.

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Reemergence of chloramphenicol sensitivity among *Salmonella enterica serovars Typhi* and *Paratyphi* : A six year experience in a tertiary care hospital

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Emerging drug resistance among Salmonella Typhi and Paratyphi has become challenging in the treatment of enteric fever. The objective of this study was to determine the antibiotic susceptibility pattern of Salmonella serotypes isolated from patients with enteric fever admitted to Manipal Teaching Hospital, Pokhara, Nepal. A total of 30 Salmonella enterica serovar Typhi, Paratyphi A, and Paratyphi B isolated from cases of typhoid and paratyphoid fever admitted to Manipal Teaching Hospital over a period from January 2012 to March 2018 were investigated. All strains were identified by standard microbiological methods and tested for in vitro antibiotic susceptibility testing,using Kirby-Bauer disc diffusion method following the criteria designed by the Clinical and Laboratory Standards Institute (CLSI 2013). S Typhi was the most predominant amongst all the isolates (18 of 30 i.e. 60%), followed by S Paratyphi A (33.3%, 10 out of 30) and S Paratyphi B (6.6%; 2 out of 30). Overall, 91.3% of the isolates were susceptible to chloramphenicol. The percentage sensitivities towards ceftriaxone, ciprofloxacin, cotrimoxazole and ampicillin were 82.6%, 75.8%, 63% and 37% respectively. All the isolates were sensitive to imipenem and amikacin. These findings suggested that there were changing patterns of antibiotic resistance in enteric fever with reemergence of chloramphenicol sensitive Salmonellae. This necessitates continuous surveillance of cases and re-evaluation of chloramphenicol therapy in Salmonella infections in Nepal.

Epidemiology and antibiotic susceptibility patterns of the Morganellaceae family in urinary tract infections in inpatients and outpatients between 2008-2017: A retrospective and comparative analysis

Mário Gajdács
University of Szeged

Members of the Morganellaceae family (namely Proteus, Providencia and Morganella) are peritrichous Gram-negative rods. In addition to strong urease production, they possess virulence factors crucial for the pathogenesis of UTIs (IgA protease, haemolysin, cytotoxins and fimbriae). They are intrinsically resistant to various antibiotics (tetracyclines, nitrofurantoin, colistin) and produce AmpC-β-lactamases, making the management of these infections difficult. Complicated UTIs caused by the species are associated with stone formation, pyelonephritis, recurrence and prolonged treatment. UTIs caused by Morganellaceae were identified retrospectively by reviewing the computerized records of the Department of Clinical Microbiology, Albert Szent-Györgyi Clinical Centre. The data screening included samples taken at inpatient departments and outpatient clinics over a 10-year period (2008-2017). Statistical analyses were performed using IBM SPSS 24.0. Morganellaceae members were more frequently isolated in case of inpatients (7.20±1.74% vs. 5.00±0.88% out of 1392 and 1058 positive urine cultures; p=0.003). 69.38% of isolates originated from catheter-specimen urine in the inpatient group. Proteus mirabilis was most frequently isolated (inpatients: 81.54±2.76%; outpatients: 82.49±4.76%) of the group. In 7.28% for inpatients and 8.33% for outpatients, co-infection occurred. The ratio of resistant strains in the inpatient group were significantly higher to co-trimoxazole (62.03±7.74% vs. 46.32±11.85%; p=0.003), ciprofloxacin (47.58±10.39% vs. 23.27±10.62%; p<0.0001) and ceftriaxone (36.19±10,83% vs. 21.10±11.10%; p=0.007), but not in case of gentamicin (16.31±4.03% vs. 14.55±3.67%; p>0.05). No meropenem-resistant isolates were recovered. Fosfomycin susceptibility testing was performed in 14.49% of isolates overall, 56.91% was susceptible. The high incidence of strains resistant to ceftriaxone and ciprofloxacin (>40% of isolates) has been consistent since 2010, while for co-trimoxazole (>60% of isolates) since 2011. Isolates originating from outpatient departments showed similar growing trends in the survey period. The knowledge of local resistance patters should influence antimicrobial therapy. The marked (5.7-times higher) increase in the isolation of Morganella and Providencia spp. since 2013 should also be noted.

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Antimicrobial screening of medicinal plant against pathogenic microorganism

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Balkumari college

Present study was carried out on the screening of medicinal plants against pathogenic organisms in the period of October 2017 to January 2018. Medicinal plants are used as traditional treatment for numerous human diseases. According to WHO, medicinal plants would be the best source to obtain a variety of drugs. Contrary to the synthetic drugs, antimicrobial of plant origin are not associated with many side effects and have an enormous therapeutic potential to heal many infectious diseases. A total of nine different medicinal plants were screened and evaluated for their antimicrobial activity against 10 pathogenic microorganisms. Among them, Euphorbia hirta, Azadirachta indica, Artemisia vulgaris were found to be effective against gram positive bacteria (Bacillus subtilis, Staphylococcus aureus, MRSA) whereas rest 6 medicinal plants (Aegle marmelos, Justicia adhatoda, Ficus religiosa, Syzygium cumini, Nyctanthes arbor, Melia azedarach) were found to be ineffective against all the microorganisms(Bacillus subtilis, Eschericia coli, Klebsiella pneumoniae, Proteus vulgaris, Pseudomonas aerogenosa, Salmonella typhii, Shigella dysentriae, MRSA,).The minimum bactericidal concentration (MBC) of Euphorbia hirta against Bacillus subtilis and Staphylococcus aureus was found to be 12.5mg/ml and MBC of Artemisia vulgaris against Bacillus subtilis and MRSA was also found to be 12.5 mg/ml while of staphylococcus aureus was 25mg/ml. Similarly, the MBC of Azadirachta indica against Staphylococcus aureus was 25mg/ml.

Metallo beta lactamase-producing *Klebsiella pneumoniae* in iran: Review of scientific reports during 2012-2017

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Klebsiella pneumoniae is one of the most important agents of hospital and community infections.There are many reports indicating resistant K.pneumoniae isolation in Iran,but Cheraghi and colleagues in 2012 reported for the first time K. pneumoniae producing NDM-1 in Iran. In this study, 47.8% of carbapenem resistant Klebsiella isolates were metallo-β-lactamase positive. Rastegarlari et al(2013) reported that from 35 isolates of K. pneumoniae isolates, 19 (54.22%) were resistant to the imipenem, and were positive for carbapenemase enzyme production. Mortality rates were reported in 33% of patients who were infected with carbapnemase producing isolates.Khodadadian in 2014 reported The prevalence of UTI infections due to K. pneumoniae as 25.3%. the antibiotic resistance for trimetoprium-sulfametoxazole , amikacin, meropenem and imipenem have reported : 98.5% , 9.4%,22.8% and 25.6% respectively. The results of the imipenem-EDTA combined disk showed that 93.2% imipenem resistance isolates were positive for the metallo-beta- lactamase enzyme Moayednia in 2014 showed among 384 Klebsiella isolates from hospitalized patients, 198 (51.5%) were ESBLs producers. Prevalence of MBLs producing in Klebsiella isolates was 2.6% (10/384), and for KPC was 48.4% (186/384).Shokri et al.in 2014 showed that among the 112 Klebsiella isolates, 49 isolates were resistant to carbapenem and 65.2% of them, were MLB+ and 12.2% of them contain NDM-1 gene. Hashemi et al(2014) reported that out of 100 K. pneumoniae isolates , 48% and 3% were ESBL and MBL positive respectively. Zare et al in 2015 showed Out of 60 K. pneumoniae isolates, 6.67% and 100% were resistant to carbapenem and ampicillin, respectively, but only one isolate was demonstrated to be positive for carbapenemases by MHT phenotypic testing. The gene of blaVIM was detected in three isolates by PCR,although other genes were not found in the isolates. Fazeli et al in 2015 showed among 49 carbapenem-resistant isolates, 6 (12.2 %) were found positive for blaNDM-1. Other MBL genes were not detected. In the study of Agha Hosseini et al. In 2015, out of 181 strains of Klebsiella, 48 samples had multiple resistance, and blaKPC gene was detected in 6.11% of Klebsiella isolates. Shoja et al (2017), showed that out of 170 Klebsiella pneumonia samples isolated, 6.5%, were resistant to Carbapenem and NDM-1 was isolated from 4 isolates. The above findings ,indicate the importance of continuous studies about antibiotic resistance in K.pneumoniae in Iran.

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Abstract

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Gentamicin enhances toxA expression in *Pseudomonas aeruginosa* isolated form cow mastitis

Atheer Aldoori
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Alongside with Staphylococcus aureus, Pseudomonas aeruginosa is also widely known pathogen as a causative agent of clinical mastitis in bovine. Exotoxin A is a potent toxin produced by P. aeruginosa and contributes essentially to its pathogenicity. Antibiotics at Subinhibitory concentrations are participate greatly in virulence improvement either by interfering with toxin production or host. The findings presented here demonstrated that cultivating P. aeruginosa in the presence of gentamicin significantly ($P < 0.05$) induced the expression of toxA and might enhance the virulence of this bacterium. In conclusion, using gentamicin to treat infections caused by P. aeruginosa may participate in more severe outcomes.

Comparison of antiseptics' efficacy on bacterial infection in hospital environment

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In this study the efficacy of antiseptics on bacteria causing hospital infections has been studied. In this study the antimicrobial activity of Descocid, Korsolex basic, Mikrobac forte and persidin 1% was studied against bacteria causing hospital infections such as Enterobacter aeruginosa 1221 (NCTC 10006), Staphylococcus epidermidis (PTCC: 1435 (Cip81.55) and Pseudomonas aeruginosa Strain PAO1. Sensitivities of bacteria were determined by Minimum inhibitory Concentration (MIC) and Minimum bactericidal Concentration (MBC) antiseptics. In the second stage, the concentration of antiseptics was prepared according to the manufacturer's suggested protocol and the effect of antimicrobial agents were studied at the certain concentration and contact time. All disinfectants (Descocid, Korsolex basic, Mikrobac forte) concentration and contact time, Accordance with the manufacturer's brochure, had inhibitory effect on all bacteria. That this is consistent with the manufacturer's brochure. Persidin one percent in concentration of from 2 and 4 V/V % and exposure time 5 minutes could not inhibit the growth of bacterial. But at concentrations of 10 and 20% respectively 15 and 30 minutes exposure time, all three types of bacteria can be inhibited, which is consistent with the manufacturer's claims. In this study, the efficacy of antiseptics was determined with the Micro-dilution method recommended by the NCCLS. Korsolex basic, weakest antiseptics (the highest MIC) for the inhibition of three bacteria was determined. But Between all four antiseptics (according to manufacturer concentration), Only one percent Percidine 2 and 4 V/V % in consumer dilution and 5 minutes exposure time failed to inhibit the growth of Pseudomonas aeruginosa, Staphylococcus epidermidis and Enterobacter aeruginosa.Keywords: Antiseptics, Hospital, Enterobacter aeruginosa, Staphylococcus epidermidis, Pseudomonasaeruginosa.

Site Attachment Inhibition Therapeutics Progress Update: Dealing with Association and Causation Issues

Simon Raymond
Alumnus Melbourne University

New Content: CRISPR, CRISPR-Cas9 Technologies; Methodology and Solutions for Association and Causation Issues. This talk highlights that "site attachment inhibition" (therapeutics involving the negation of cellular attachment, or entry/transfer, by the pathogen) is intended to consist of both: (A) Treatment of established infections; and, (B) New generation immunization programs (preventative treatment). New generation immunization programs, based on prenatal stem cell therapy in the prenatal period and earlier spanning back to spermatogenesis and oogenesis (stc based immunization), is intended to involve gene mutagenesis, and knockout. Validation for likely success includes inherited mutations mentioned in the references noted that provide resultant resistance (immunity) to the stated infections including HIV and Malaria. Association and causation issues need to be dealt with given that even the known CCR5-Δ32 mutation has not been completely confirmed as direct/causative of the resultant resistance/immunity. A discussion with regards to prenatal and germline stem cell therapy, in addition to CRISPR, and CRISPR-Cas9, is presented in the below link to the US NIH Library. It is not up to date with "site attachment inhibition" therapeutics, however it does provide a general discussion on the above stated topics broadly. https://ghr.nlm.nih.gov/primer/genomicresearch/genomeediting In brief, using technologies, including CRISPR and CRISPR-Cas9, would allow comparison between cells in which entry of the pathogen is occurring to those in which entry of the pathogen is not occurring (or, not able to) and through subsequent analysis of the genetics of the human cellular biology used by the pathogen to gain cellular attachment (or, transfer and entry), the genes to be targeted in mutagenesis and knockout can be analysed. NB: The pathogen machinery also is to be analysed. The medical profession may need to head toward the future and consider stc based immunization programs for inclusion as routine procedures the same way procedures such as amniocentesis have become part of practice in the profession. Intentions with regards to patent rights have been detailed in previous publications. In summary, this presentation presents new content with regards to site attachment inhibition therapeutics. Site attachment inhibition therapeutics is intended to be applicable to all infections broadly. The next conference presentations will cover issues surrounding antimicrobial resistance.

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Abstract

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Isolation and characterization of NDM-1 producing *klebsiella pneumoniae* from three palestinian hospitals

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Palestinian Medical Complex

Klebsiella pneumoniae can cause a wide range of infections, including meningitis, bacteremia, wound infection, pneumonia, urinary tract infection, etc. This organism is becoming resistant to a large group of antibiotics, especially β-lactam antibiotics. The reason for multidrug resistance may be the production of extended- spectrum β-lactamases (ESBLs), carbapenemases/metallo β-lactamases or AmpC β-lactamases. Or changes in the bacterial cell wall structure. The aim of the present study was to isolate and characterize of Carbapenem resistant Klebsiella pneumoniae isolated from the patients admitted to one of three Palestinian hospitals (Palestinian medical complex, Rafedia Surgical hospital, and Beit Jala Governmental hospital) west bank Palestine.

ASP in private sector: Sharing the experience and challenges

Dirar Abdallah
Prime Hospital

Antibiotic stewardship programs (ASP) are of paramount importance in this era of increasing antibiotics resistance worldwide, there are examples of well-established ASP programs worldwide but mainly in teaching & tertiary, mainly public hospitals but seldom in small- medium sized private hospitals and literature in this regard is scarce. This presentation highlights the importance of implementing ASP in general and particularly in private hospitals. I will highlight the contribution of the private sector to health care in the UAE and in many countries worldwide, this contribution is large and still growing worldwide, thus making it very crucial to start such program across private hospitals where most of the antibiotics abuse& misuse is happening due to many reasons. I will share our experience in Prime Hospital- a medium sized 100 bed private hospital in Dubai- and efforts made toward implementation of the ASP program and the challenges which we encountered and still facing in trying to implement it which are different from the challenges encountered in the public & teaching sector, with a special emphasis on the role of the IT and the hospital information system in the ASP.

Fever is not symptom of any disease, none of diseases require fever as its symptom

K M Yacob
Marma Heatth Centre

Symptom Definition is the only parameters necessary for a Symptom. As any or all other definitions, symptom definition should be describe the symptom scientifically. If it cannot describe clearly, there is no use of a symptom definition. A symptom is a departure from normal function or feeling which is noticed only by a patient, indicating the presence of disease or abnormality.One cannot be understand directly the temperature is elevated in hypothalamus .A mechanical device is necessary to measure elevated temperature in hypothalamus. In symptom definition, fever definition can't be found. The elevation of body temperature is not included in symptom definition. The main evidence which proves that fever is not a symptom of disease is symptom definition itself. Elevated temperature or increased temperature never make fever or symptoms of fever. it may create hyperthermia.None of diseases or cause of diseases require fever as its symptom.If the mosquito bites its virus, bacteria, venom gets deposited in the body as a result according to nature and strength of virus, bacteria ,venom symptoms like itching, pain and signals like colour change, inflammation, may occurred.we can see the symptoms, Signals and indications of virus, bacteria, venom which multiple or spreading or damages(disease) the body before fever emerge . The symptoms of virus, bacteria and venom are not based on fever. The symptom, signs and signals are shown every time when virus, bacteria and venom are present in the body. In such a situation fever is not necessary, because fever is not seen in everyone. In a state of multi-disease conditions, if fever is caught and cured, fever will not show the symptoms of other diseases. In H1N1 infections 30% of patients actually had no fever.There is a sharp difference between Symptoms of fever and symptoms of rising temperature. Symptoms of fever includes body pain, fatigue to mind and body, reduced appetite, reduced motion and indigestion, internal and external discomfort, etc., The symptoms, signs, signals of fever are only seen at the presence of fever. During cancer the symptom, signs and signals of cancer are shown every time.A patient having cancer and fever at the same time, symptoms, signs and signals of both cancer and fever are shown every time.A symptom of cancer never become symptom of fever or a symptom of fever can never become symptom of cancer. During cancer the symptom, signs and signals of cancer are shown every time. How can separate symptom of disease and symptom of fever. In fever, both symptom of disease and symptom of Fever are included. Deduct symptom of disease from total symptoms we will get symptom of fever. Like that we can separate signs, signals, and actions of both fever and disease.

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Abstract

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Drug resistant pattern of bacterial isolates in infected wounds at bahir dar regional health research laboratory center

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Bahir Dar University

Background An increased antibiotic resistance of bacterial isolates from wound infections is a major therapeutic challenge for clinicians. The aim of this study was to describe bacterial isolates that caused wound infection and determine their current antimicrobial susceptibility pattern. Methods: We analyzed the records of 380 wound swab samples that have been cultured at Bahir Dar regional health research laboratory from January, 2013 to December, 2015. Swabs from different wound types were collected aseptically. Antimicrobial susceptibility test was performed using disc diffusion technique as per the standard protocol. Bacteriological and socio-demographic data were collected using a standard data collection format. The data was cleared, enterd and analyzed for descriptive statistics using SPSS version 20. Result: The overall bacterial isolation rate in this study was at 61.6% (234/380). About 123 (52.6%) of the isolates were gram positive cocci and 111 (47.4%) were gram negative rods. The predominant isolate was S. aureus at 100 (42.7%) followed by E. coli 33 (14.1%), P. aeruginosa 26 (11.1%) and S. pyogenes 23 (9.8%). The overall rate of multidrug resistant (MDR) bacterial pathogens that caused wound infection was 54.7%. Out of these, 35 (15.1%) of the isolates were resistant to more than five antibiotics. Ampicillin had the highest resistance rate at 85.9% among gram negative isolates. Whereas the highest resistance rate among gram positive isolates was in erythromycin at 31.1%.Conclusion: In the studied region, higher frequency of mono and multi drug resistance of bacterial pathogens that caused wound infection was documented. Thus, a new method to the causative agent and antimicrobial susceptibility testing surveillance in areas where there is no culture facility is needed to assist the health professionals in the selection of appropriate antibiotics.

Direct evidence of viral infection and mitochondrial alterations in the brain of fetuses at high risk for schizophrenia

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There is increasing evidences that favor the prenatal beginning of schizophrenia. These evidences point toward intra-uterine environmental factors that act specifically during the second pregnancy trimester producing a direct damage of the brain of the fetus [1]. The current available technology doesn't allow observing what is happening at cellular level since the human brain is not exposed to a direct analysis in that stage of the life in subjects at high risk of developing schizophrenia. Methods. In 1977 we began a direct electron microscopic research of the brain of fetuses at high risk from schizophrenic mothers in order to finding differences at cellular level in relation to controls. Results. In these studies we have observed within the nuclei of neurons the presence of complete and incomplete viral particles that reacted in positive form with antibodies to herpes simplex hominis type I [HSV1] virus, and mitochondria alterations [2]. Conclusion. The importance of these findings can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. A study of the gametes or the amniotic fluid cells in women at risk of having a schizophrenic offspring is considered. Of being observed the same alterations that those observed previously in the cells of the brain of the studied foetuses, it would intend to these women in risk of having a schizophrenia descendant, previous information of the results, the voluntary medical interruption of the pregnancy or an early anti HSV1 viral treatment as preventive measure of the later development of the illness.. 1.Yolken RH, Torrey EF. Viruses, schizophrenia and bipolar disorders. Clin Microbiol Rev 1995; 8: 131-145. 2.Mesa CS. An ultrastructural study of the temporal lobe and peripheral blood in schizophrenic patients. Rev Neurol 2001; 33: 619-623.

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Abstract

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Factors most influencing antibiotic stewardship program and comparison of prefinal and final year undergraduate medical students

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AIIMS

As future practitioners, undergraduate medical students have a key role in the antimicrobial stewardship program (ASP). However, at present, there are not much data about their knowledge and perception of antibiotic resistance and ASP in India. This was a cross sectional questionnaire based survey administered to the prefinal and final year undergraduate medical students of a tertiary care institution. One hundred and ninety seven students participated in our study constituting 70% response rate. The mean difference in knowledge score between prefinal and final year students was 0.77 (95% confidence interval: 0.30–1.24, P = 0.0016). Thirty seven (39.7%) prefinal and 57 (54.8%) final year students knew the correct definition of antimicrobial stewardship. Majority of the participants, i.e., 66 (70.9%) prefinal year and 80 (76.9%) final year students perceived antibiotic resistance as a public health problem. Principal component analysis revealed the greater role of attitude related questions. Good knowledge and positive attitude are paramount for the effective implementation of the antibiotic stewardship program. Our study revealed that the knowledge gap exists among the undergraduate students about the rational use of the antibiotic stewardship program. It was also revealed that the role of attitude plays a more significant role than knowledge for the proper understanding of the program. A sustained effort is required to make them aware of the rational use of antibiotics by incorporating the knowledge and practice of the ASP into their study curriculum.

MRSA revisited: Going down the memory lane

Saleem Hafiz
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Antimicrobial resistance is a global health problem of particular importance, which has led to an urgent need for new antimicrobial drug development. An alternative approach inhibitors or synergistic combinations of existing drugs that could overcome the mechanism(s) of resistance. The classical example of this is combinations of β-lactamase inhibitors such as clavulanic acid or sulbactams and a β-lactam antibiotic. Following the introduction of each generation of β-lactam, resistance rapidly emerged . In the case of Staphylococcus aureus, penicillin resistance mediated by a blaZ-encencoded β-lactamase (penicillinase) was followed by the emergence of methicillin-resistant S. aureus (MRSA) shortly after the introduction of methicillin (a β-lactamase-resistant β-lactam) in 1961 .Resistance to β-lactam antibiotics in *MRSA is mediated primarily by the acquisition of an alternative penicillin-binding protein 2 (PBP2a)* encoded by the mecA gene, which is carried on a mobile element known as staphylococcal cassette chromosome mec (SCCmec). In 2011,mecC was described, which, like some other types of MRSA, is associated with livestock. This newly described mecC-encoded PBP2c does not mediate resistance to penicillin and that the adjacent type E blaZ gene is required for resistance to penicillin.This biological difference as shown in literature can be exploited for treatment by combining penicillin and clavulanic acid, a β-lactam inhibitor.Several new antimicrobials are in the pipeline to combat the problem. However, as the history of bacterial resistance has taught us, it will be a matter of time until these organisms adopt mechanisms of resistance to these new drugs.MRSA isolate were tested beta lactamase production and designated as either intrinsically or acquired-resistant S. aureus, when tested against beta-lactam antimicrobial agents in combination with clavulanic acid or sulbactam (Beta-lactamase inhibitors), they become susceptible to the Beta-lactam antimicrobial agents.On the other hand, beta-lactamase- mediated oxacillin resistance is probably always plasmid mediated and is acquired but it also refers to resistance to other beta-lactams depending on their susceptibility to hydrolysis by this enzyme. In our study we found MRSA producing Beta lactamase, non-Beta lactamase producing MRSA,with altered PBP2a was the sole cause of methicillin/cefoxitin resistance and Betalactamase producer alongwith altered PBP. Since clavulanic acid and sulbactam inhibit Staphylococcal beta-lactamases, theoretically these Combinations could be used to treat MRSA infections.

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