

International Journal of Scientific Research

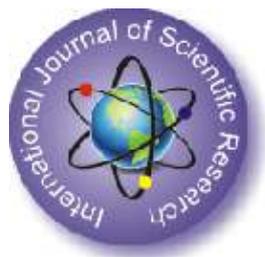
Indexed with International ISSN Directory, Paris

Volume 1 | Issue 3 | August 2012



ISSN No. 2277 – 8179

A Multi-Subject Journal



ISSN No. 2277 – 8179

International Journal of Scientific Research
Journal for All Subjects

Advertisement Details		
Position	B/W (Single Color)	Fore Color
Full Inside Cover	₹ 6250	₹ 12500
Full Page (Inside)	₹ 5000	-
Subscription Details		
Period	Amount Payable	
One Year (12 Issues)	₹ 3000	
Two Year (24 issues)	₹ 5800	
Three Year (36 issues)	₹ 8700	
Five Year (60 issues)	₹ 14400	
<p>You can download the Advertisement / Subscription Form from website www.gra.in. You will require to print the form. Please fill the form completely and send it to the Editor, International Journal of Scientific Research along with the payment in the form of Demand Draft/Cheque at Par drawn in favour of International Journal of Scientific Research payable at Ahmedabad.</p>		

Editor-In-Chief	
Khansa Memon Editor, Sarah Publishing Academy	
Editorial Advisory Board	
Dr. Ashok S. Pawar Associate Professor, Dept. of Economic Dr. Babaasaheb Ambedkar Marathwada University, Aurngabod	Dr.(Prof) Vijay Kumar Soni Principal, Jai Meenesh College, Phagi, Jaipur, Rajasthan
Dr. A.R. Saravankumar Assistant Professor in Education DDE, Alagappa University, Tamilnadu	Dr.R.Ramachandran Commerce Dde Annamalai University Tamilnadu India
Dr. R Ganpathy Assistant Professor in Commerce Directorate of Distance Education Alagappa University Karaikudi.	Dr. Amit Bandyopadhyay Assistant Professor Department of Physiology University of Calcutta
Dr. V. Kumaravel , Professor and Head Vivekanandha Buss. School for Women Tiruchengode, Namakkal Dist	Dr. K. Prabhakar , Professor, Department of Manag. Studies, Velammal Engg College, Chennai
Dr. Sunita J. Rathod Maharashtra Education Service Group-B DIET Dist. Jalna	

1. Thoughts, language vision and example in published research paper are entirely of author of research paper. It is not necessary that both editor and editorial board are satisfied by the research paper. The responsibility of the matter of research paper/article is entirely of author.
2. Editing of the **International Journal of Scientific Research** is processed without any remittance. The selection and publication is done after recommendations of atleast two subject expert referees.
3. In any condition if any National/International University denies accepting the research paper published in IJSR then it is not the responsibility of Editor, Publisher and Management.
4. Only the first author is entitle to receive the copies of all co-authors
5. Before re-use of published research paper in any manner, it is compulsory to take written permission from the Editor-IJSR, unless it will be assumed as disobedience of copyright rules.
5. All the legal undertaking related to **International Journal of Scientific Research** is subject to Ahmedabad Jurisdiction.
7. The research journal will be send by normal post. If the journal is not received by the author of research papers then it will not be the responsibility of the Editor and publisher. The amount for registered post should be borne by author of the research paper in case of second copy of the journal.

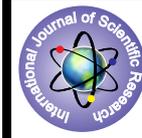
Editor,
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH
3, SUHANA, Nr. Rubi Apartment, B/H NID, Rajnagar Road,
Paldi – 380007. Ahmedabad-Gujarat. (INDIA)
Contact: +91 98247 02127, +91 88660 03636
www.theglobaljournals.com | ijsr@theglobaljournals.com

INDEX

Sr. No.	Title	Author	Subject	Page No.
1	A Simple Teaching Module For Histology: Integration Of Traditional Hands-On Laboratory Methods And Modern Computer Technology.	Mrs. Vandana A. Tendolkar, Dr. Archana U.shekokar	Biotechnology	1-2
2	Synthesis And Studies On Metal Complexes Of 5-(Furan-2-Yl)-3- (2-Hydroxy Phenyl)1-H Pyrazole-1- Carbothiohydrazide	P.Saravana Bhava, P.Tharmaraj , S.Johnson Raja	Chemistry	3-6
3	Determination Of Inorganic Hazardous Air Pollutant Levels In Ambient Air Repairable Suspended Particulate Matter (P.m10) In And Around Tirupati, Chittoor District, Andhra Pradesh, India.	Mr.E. Shyam Sundar, Mr.P.M.N.Prasad, V. Hanuman Reddy, Dr. Y.V.Rami Reddy	CHEMISTRY	7-9
4	Adaptation and Convergence of International Financial Reporting Standards	Dr.S.K.Khatik, Mr.Binoy Arickal	Commerce	10-13
5	A Conceputal Framework Of Green Supply Chain Management	Dr. Vipul Chalotra	Commerce	14-15
6	Perspectives Of Food Processing In India Under Tourism Segment	Dr. S. Asaithambi	Economics	16-19
7	Global Business Perspectives Of Tourism In The Globalised Era	Prof. S. Selvamani, Dr. M. Perumal	Economics	20-22
8	A Study Of Trade Diversifications In Saarc Region	Dr.Dinesh Kumar, Sanjeev, Ruchi Singh	Economics	23-25
9	A study of professional commitment among B. Ed. Teacher educators of Bangalore University	Dr. Kotreshwaraswamy A. Surapuramath	EDUCATION	26-27
10	Self Concept of Collge Students	Dr. S. K. Panneer Selvam	EDUCATION	28-29
11	Leveraging Technology For Enhancing Teaching Effectiveness	Dr Mahalaxmi Krishnan	Education	30-31
12	Utilization Of Computers In Secondary Schools	Dr. Praveena, K. B.	Education	32-33
13	New Scheme For Data Hiding Using N-Ary Tree Structure	D.Sampath Kumar, N. Suma	Engineering	34-35
14	Bioaccumlation Of Heavy Metal In Labeo Rohita From River Panchgang.	Ms.Pallavi T.Kininge, Ms.Sushma C.Bondre, Dr.Milind Kale, Dr.M.M.Pillai., Ms.Amaraja Kulkarni	Engineering	36-39
15	Energy Optimization And Power Scheduling In Low Power Sensor Network	Prof.MS.Vaishali R , Prof.D.K.shende, Prof. MS. Shubhangi	Engineering	40-42
16	Analysis Of Power Transients In Transmission Devices For Stable Operation	Sunil Kumar Mahapatro	Engineering	43-45
17	Modeling Of Pv Module And Examining The Effect Of Irradiance In Matlab	Sangita S. Kondawar , Prof. U.B. Vaidya	Engineering	46-49
18	Role of ICT in Automobile Industry	Ms.A.Josephine Stella, Dr.K.Rajeswari	Finance	50-52
19	Collection And Services Of Special Libraries In Raebareli (India): A Survey	Dr. Sharad Kumar Sonker, Pooja	Library Science	53-55
20	Information Seeking Behaviour Of Medical & Engineering Professionals Of Lucknow: A Comparative Study	Vijeta Faraijia, Dr. M. P. Singh, Dr. Anurag Shrivastava	Library Science	56-60
21	Contact Details & Contact Number Of The Authors	Pushpendra Singh, Prof. K.L. Mahawar	Library Science	61-64

22	Indian Banking Industry: Competition And Opportunities	Bind Kumar Tiwary, Bind Kumar Tiwary	Management	65-67
23	Advertisement Attraction Of Vodafone Mobile Services Television Commercials With Special Reference To Erode District	Dr. V. M. Senthilkumar, Dr. P.Anbuoli	Management	68-70
24	A Study On Customer Satisfaction Towards Tvs Scooty In Thanjavur District Of Tamilnadu	Mrs. R.RENUKA, Dr. M. K. DURGAMANI	MARKETING	71-72
25	Jhumur Dance In Tea Gardens Of Barak Valley: A Development Dimension	Dr Partha Sarkar	Mass Communication	73-74
26	Cytohistopathological Correlation of Thyroid Swelling	Dr. Chetna J. Mistry, Dr. T. Y. Vijapura, Dr. Rupti K Pande	Medical Science	75-76
27	Can hormonal influence be a cause of auditory neuropathy	Ms.Archana, Mr.AyasMuhammed ,Ms. Maya,Ms.Jyoti	Medical Science	77-78
28	Application Of Auditory Evoked Potentials In Differential Diagnosis Of Acoustic Schwannoma From Jugular Foramen Schwannoma –A Case Report	Ms.Archana, Mr.AyasMuhammed, Ms.Saffa	Medical Science	79-80
29	Prevalence And Antibiotic Susceptibility Pattern Of Methicillin-Resistant Staphylococcus Aureus In A Tertiary Care Hospital, Jamnagar, Gujarat.	Dr. Viral P Shah , Dr. Neetu Mundra , Dr. Swati Vachhani , Dr. Hiral Y Shah , Dr. Hiral Gadhvi , Dr. Hitesh Shingala , Dr. Mala sinha	Medical science	81-82
30	Audiological Profile In Osteogenesis Imperfecta: A Case Report	Ranjana Elizabeth James, Kishan M M, Prasanna V	Medical Science.	83-84
31	Preventive Modalities In The Management Of Obesity: A Review	Dr. Deep Inder , Dr. Pawan Kumar	Medical Sciences	85-86
32	Isolation And Antibiotics Susceptibility Patterns Of Acinetobacterbaumannii From Various Clinical Samples In Tertiary Care Hospital, Jamnagar , Gujarat.	Dr. Hiral Y Shah, Dr. Viral P Shah, Dr. Hiral MGadhavi , Dr. NeetuA Mundra , Dr. Hitesh K Singala , Mala sinha	Medical Sciences	87-88
33	Phenomenological Insights For A Critique Of Positivist Approach In Social Sciences.	Dr. Pardeep Kumar, Dr. Jatinder Kumar Sharma	Philosophy	89-90
34	Developing National Integration In India Through Physical Education Activities	Mr.S.Dhanaraj , Dr.A.Palanisamy	Physical Education	91-92
35	Microcontroller Based Color Measurement Using Rgb Leds	T. N. Ghorude , A. D. Shaligram	Science	93-95
36	Civil Society Role in Combating Corruption:A Small but Radical Idea	Dr.P. Sakthivel, Dr.H. Munavarjan	SocialSciences	96-97
37	Protozoan diversity of Kapsi lake kapsi (MS) India	Ade P. P.	Zoology	98-100
38	Cloud To Devising Messaging (C2dm) And Their Applications For Mobile Devices.	Biren M Patel, Vijaykumar B Gadhavi, Mr Ashish Kumar	Zoology	101-103

Prevalence And Antibiotic Susceptibility Pattern Of Methicillin-Resistant Staphylococcus Aureus In A Tertiary Care Hospital, Jamnagar, Gujarat.



Medical science

KEYWORDS : Prevalence, MRSA

Dr. Viral P Shah	MBBS ,MD-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Neetu Mundra	MBBS ,Resi-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Swati Vachhani	MBBS ,Resi-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Hiral Y Shah	MBBS, MD-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Hiral Gadhvi	MBBS,MD-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Hitesh Shingala	MBBS,MD-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat
Dr. Mala sinha	MBBS,MD-Microbiology, Department of Microbiology, M.P.Shah Medical college, Jamagar, Gujarat

ABSTRACT

Methicillin resistant Staphylococcus aureus (MRSA) is an important nosocomial pathogen. The study was carried out to investigate the prevalence of MRSA and their rate of resistance to different antibiotics used for treatment. Identification of Staphylococcus aureus was confirmed by standard methods and the antimicrobial susceptibility testing was performed by Kirby-Bauer disc diffusion method. Of the 191 isolates of Staphylococcus aureus, 58 isolates were identified as Methicillin Resistance Staphylococcus aureus (30.37%) and 7 were identified as Vancomycin Resistance Staphylococcus aureus (3.75%). During this study sensitivity of MRSA to linezolid is 93.10%, Ampicillin + Sulbactams (58.62%), levofloxacin (53.45%), Tetracycline (32.75%), Lincomycin (29.31), Cotrimoxazole (13.80%), Ciprofloxacin 10.34%, Roxithromycin (8.62%) and Gentamycin (2.74%). Findings presented in this study indicated a high level of resistance to widely used therapeutic agents. So, appropriate knowledge on the current antibiotic susceptibility pattern of MRSA is essential for appropriate therapeutic treatment. The study showed high prevalence of MRSA in hospital setting indicating need of good control measures such as proper hand hygiene and monitoring of susceptibility patterns of MRSA also help in preventing the spread of infections.

Introduction

Staphylococcus aureus is responsible for causing a variety of human infections, which may range from minor skin diseases to life-threatening infections. (1) Several mechanisms for the methicillin resistance seen in *S. aureus* have been detected. The most important is the production of an altered penicillin-binding protein (PBP) that has a low affinity for β -lactam antibiotics and whose effects are determined by several structural genes (*mec A*) (9,10). Other known mechanism of methicillin resistance is the hyper production of penicillinase enzyme (10,11). After the emergence of MRSA as a nosocomial pathogen in the early 1960s, there have been an increasing number of outbreaks of MRSA infections in hospitals reported from many countries. Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the most important nosocomial pathogens and has emerged as a serious threat to public health. (7) Life threatening sepsis and osteomyelitis caused by MRSA have also been reported. (8) *Staphylococcus aureus* infections usually respond to β -lactam and related group of antibiotics but the emergence of *Methicillin-resistant S. aureus* (MRSA) has posed a serious therapeutic challenge. (2) Infected and colonized patients in hospitals mediate the dissemination of MRSA strains, and hospital staff is the main source of transmission. (3) The possible predisposing factors that increase the chance of emergence and spread of MRSA are prolonged and repeated hospitalization, indiscriminate use of antibiotics, lack of awareness of proper hygiene, intravenous drug abuse, and presence of indwelling medical devices. (4) MRSA strains are difficult to eradicate as they are multidrug-resistant (1). Resistance has been reported to these drugs from various parts of the country. (5,6) The knowledge of prevalence of MRSA and their antimicrobial-susceptibility pattern is a must

for appropriate treatment of these infections.

Material and Method:

Isolation and identification of clinical specimens

600 clinical specimens received at the microbiology laboratory in Gurugobindsingh hospital in Jamnagar, Gujarat during the period of January 2012 to May 2012. All samples were processed and inoculated on blood agar, nutrient agar and Macconkey agar. Out of all (600) samples, 191 staphylococci aureus were isolated. Staphylococci aureus were diagnosed by growth characteristics on Macconkey agar (pink colour colony), on Nutrient agar (large, circular, opaque colony) on Blood agar (greyish white colony), gram stain morphology (gram positive cocci in clusters), positive catalase test, positive coagulase test (slide & Tube coagulase test), growth on Mannitol salt agar & pigment characteristics (golden yellow).

Antibiotics susceptibility testing

The antibiotic susceptibility pattern of all the staphylococcal aureus strains were determined by modified Kirby Bauer disc diffusion method against the following antibiotics: Cotrimoxazole (25 μ g), Ampicillin-sulbactam (20 μ g), Tetracycline (30 μ g) cephalixin (30 μ g), Ciprofloxacin (5 μ g), Cloxacillin (1 μ g), Lincomycin (2 μ g), Gentamycin (10 μ g) and Linezolid (2 μ g). All tests were performed on Muller-Hinton agar and were interpreted after incubation for 24 h at 37°C. The zone diameters measured around each disk were interpreted on the basis of guidelines published by the Clinical and Laboratory Standards Institute (CLSI). *S. aureus* ATCC 25923 was used as a standard control strain.

Detection method for MRSA

Screening was performed according to CLSI guideline using ceftoxitin disc (30 µg) diffusion testing method. From each strain, a suspension equivalent to 0.5 MacFarland was prepared. Then a swab was dipped and streaked on the surface of a Mueller-Hinton agar supplemented. After incubation for 24 h at 35°C. If the zone of inhibition is ≤21 mm in diameter the isolate was considered as a methicillin resistant.

Results: Of the 191 isolates of *Staphylococcus aureus*, 58 isolates were

identified as Methicillin Resistance *Staphylococcus aureus* (30.37%) and 7 were identified as Vancomycin Resistance *Staphylococcus aureus* (3.75%)

Table 1: Distribution of *Staphylococcus* From Various Clinical Specimens.

Clinical specimens	Number of isolates	MRSA	percentage
Urine	04	00	0%
Pus	132	43	32.58%
Sputum	02	01	50.00%
Fluids	02	00	0%
Blood Culture	47	11	18.97%
Miscellaneous	04	03	75%

Table 1 shows that out of 132 pus samples 43(32.58%) were MRSA positive, out of 47 blood culture 11(18.97%) were MRSA positive.

out of 4 miscellaneous samples 3 were MRSA positive and out of 2 sputum 1 (50%) was MRSA positive.

Table 2: Frequency in percentage of sensitive strains of MRSA to various antibiotics

Ampicilin + Sullbactam (20mcg)	58.62%
Cotrimoxazole (20mcg)	13.80%
Tetracycline (30mcg)	32.75%
Cefotaxime (30mcg)	1.72%
Ciprofloxacin (5 mcg)	10.34%
Levofloxacin (5 mcg)	53.45%
Linezolid (30mcg)	93.10%
Roxythromycin	8.62%
Lincomycin (2mcg)	29.31%
Gentamycin (10mcg)	7.24%

Table 2 shows Linezolid has a maximum sensitivity of 93.10% followed by ampicillin+sulbactam 58.62%,levofloxacin 53.45%,Tetracycline32.75%,lincomycin 29.31%, cotrimoxazole 13.80%, ciprofloxacin 10.34%, roxythromycin 8.62%, gentamycin 7.24% and cefotaxime 1.72%.

Discussion:

MRSA is a major Nosocomial pathogen causing significant morbidity and mortality. The important reservoirs of MRSA in hospitals/institutions are infected or colonized patients and transient hand carriage is the predominant mode for patient-to-patient transmission. Methicillin was indicated for treatment of *Staphylococcal* infections due to penicillinase producing staphylococci. Methicillin resistant strains gradually evolved during last three decades which accounted for less than 0.1% of *Staphylococcus aureus* in 1960s. Since then MRSA have become well established as hospital acquired pathogen. In our study MRSA isolated were in majority form pus samples (74.13%),Followed by blood cultures (18.97%) ,miscellaneous 5.17% and from sputum 1.72%. In our study 30.37% of the total isolates of the *Staphylococcus aureus* were MRSA. In India, the incidence of MRSA shows a large variation, from 6.9% to 81%. Some studies have reported comparable prevalence: 54.8% in Uttar Pradesh, (Anupurba et al 2003)(4) , 52.9% in Assam (Assadullah et al 2003)(12). In contrast, other studies have reported entirely different prevalence: 80.89% in Indore (Verma et al 2000)(13), 19.56% in Nagpur (Tahnkiwale et al 2002)(14).The epidemiology of MRSA is gradually changing since its emergence was reported. Initially there were occasional reports but now it has become one of the established hospital acquired pathogen.. Antibiotic sensitivity results showed that all MRSA strains were significantly more resistant to antibiotics compared to Methicillin Sensitive *Staphylococcus aureus*(MSSA) isolates.The unavailability of vancomycin in many parts of the country and its high cost should make the physicians look for the alternatives. Therefore, regular surveillance of hospital-associated infections including antimicrobial susceptibility pattern of MRSA and formulation of a definite antibiotic policy may be helpful in reducing the burden of MRSA infections in the hospital.

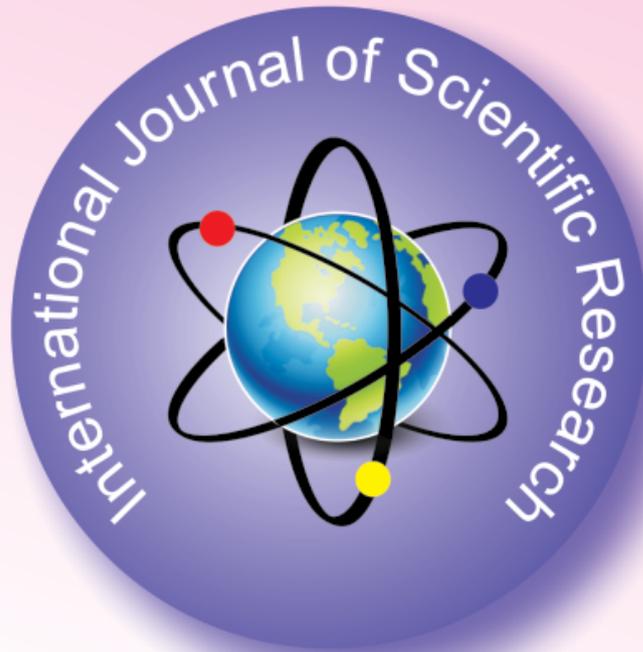
CONCLUSION

The emergence of drug resistance in MRSA is worrisome in the present therapeutic scenario. A regular surveillance of hospital associated infection including monitoring antibiotic sensitivity pattern of MRSA is necessary

to controlling the spread in the hospital and strict antibiotic policy is of importance. According to this study, vancomycin and linezolid seems to be the only antimicrobial agents which shows higher sensitivity even with multidrug resistance. Vancomycin remains the first choice of treatment for MRSA and so vancomycin use should be limited to those cases where there are clearly needed.

REFERENCE

- 1.Tiwari HK, Das AK, Sapkota D, Sivarajan K, Pahwa VK. Methicillin resistant *Staphylococcus aureus*: Prevalence and antibiogram in a tertiary care hospital in western Nepal. *J Infect Dev Ctries*. 2009;3 :681-4. | 2. Muralidharan S. Special article on methicillin resistant *Staphylococcus aureus*. *J Acad Clin Microbiol*. 2009;11 :15-6. | 3.Rajaduraiipandi K, Mani KR, Panneerselvam K, Mani M, Bhaskar M, Manikandan M. Prevalence and antimicrobial susceptibility pattern of methicillin resistant *Staphylococcus aureus*: A multicentre study. *Indian J Med Microbiol*. 2006;24 :34-8. | 4.Anupurba S, Sen MR, Nath G, Sharma BM, Gulati AK, Mohapatra TM. Prevalence of methicillin resistant *Staphylococcus aureus* in a tertiary referral hospital in eastern Uttar Pradesh. *Indian J Med Microbiol*. 2003;21 :49-51. | 5. Menezes GA, Harish BN, Sujatha S, Vinothini K, Parija SC. Emergence of vancomycin-intermediate *Staphylococcus* species in southern India. *J Med Microbiol*. 2008; 57: 911-2. | 6. Tiwari HK, Sen MR. Emergence of vancomycin resistant *Staphylococcus aureus* (VRSA) from a tertiary care hospital from northern part of India. *BMC Infect Dis*. 2006;6: 156. | 7. Maple PA, Hamilton-Miller JM, Brumfitt W. Worldwide antibiotic resistance in methicillin resistant *Staphylococcus aureus*. *Lancet*. 1989;1: 537-40. | 8.Cox RA, Conquest C, Mallaghan C, Marples RR. A major outbreak of methicillin resistant *Staphylococcus aureus* caused by a new phage type (EMRSA-16) *J Hosp Infect*. 1995;29: 87-106. | 9.Hackbarth CJ, Chambers HF: Methicillin-resistant staphylococci: Genetics and mechanisms of resistance. *Antimicrob Agents Chemother* 1989, 33:995-999. | 10.Tomasz A, Drugeon HB, de Lancaster HM: New mechanism for methicillin-resistant *Staphylococcus aureus* : Clinical isolates that lack the PBP – 2a gene and contain normal penicillin-binding protein with modified penicillin-binding capacity. *Antimicrob Agents Chemother* 1989, 33:1869-1874. | 11. Fruit AC, Wielders CLC, Verhoef J, Schmitz FL: Epidemiology and susceptibility of 3051 *Staphylococcus aureus* isolated from 25 university hospitals participating in the European SENTRY Study. *J Clin Microbiol* 2001, 39:3727-2732. | 12.Assadullah S, Kakru D, Thoker M, Bhat F, Hussai N, Shah A (2003).Emergence of low level vancomycin resistance in MRSA. *Indian J Med. Microbiol*. 21: 196-198. | 13.Verma S, Joshi S, Chitnis V, Hemwani M, Chitnis D (2000). Growingproblem of methicillin resistant *Staphylococci*. *Indian Scenario. Indian J. Med. Sci*. 54: 535-540 | 14.Tahnkiwale S, Roy S, Jalgaonkar S (2002). Methicillin resistant amongisolates of *Staphylococcus aureus*: Antibiotic sensitivity pattern andphage typing. *Indian J. Med. Sci*. 56: 330-334. |



Sara Publishing Academy
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH
Journal for All Subjects

The Editor,
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH
8-A, BANAS, Opp. SLU Girls College, NR. Congress Bhavan,
Paldi – 380006. Ahmedabad-Gujarat. (INDIA)
Contact: +91 98247 02127, +91 88660 03636
Website : www.theglobaljournals.com
Email Id: ijsr@theglobaljournals.com