

ISOLATION AND IDENTIFICATION OF STAPHYLOCOCCUS AUREUS USING STANDARD METHODS

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Abstract: A methicillin resistant *S. aureus* (MRSA) screen tests solely for the presence of MRSA and no other microbes. This test is used to screen for MRSA in patient in hospitals. The first strain of penicillin resistant *S. aureus* was isolated in London, England hospitals. *Staphylococcus* is a versatile organism with several virulent characteristics and resistance mechanisms. Multidrug resistance is now the norm among the Gram-positive bacteria pneumococci, enterococci and staphylococci. *S. aureus* is perhaps the pathogen of greatest concern because of its intrinsic virulence, its ability to cause a diverse array of life-threatening infections in humans and in various animal species, and its capacity to adapt to different environmental conditions. In the present study, a total of 36 isolates of MRSA were obtained. All the suspected colonies were gram stained and plated on manitol salt agar. Growth of golden yellow colonies of *Staphylococcus aureus* on manitol salt agar plate. On gram staining gram-positive cocci in clusters were observed on all the slides. On manitol salt agar, small yellow manitol fermenting colonies were obtained. On MacConkey agar small light pink lactose fermenting colonies were observed. In the present study, the efficiency of the tube coagulase test can be markedly improved by sequel testing of the isolates with Mannitol salt agar, DNase and Tube coagulase. There is no single phenotypic test (including tube coagulase) that can guarantee reliable results in the identification of *Staphylococcus aureus*.

Keywords: Gram-positive, MRSA, Resistant strain, *Staphylococcus*, Virulent

REFERENCES

- Ananthanarayan, R and Panicker, C.K.J. (2002). *Staphylococcus*. Text book of Microbiology, 6th ed. Orient Longman Pvt. Ltd. India.
- Banerjee, S., Emori, G., Culver, D.H., Gaynes, R.P., Martone, W.J., Emori, T.G., Horan, T.C., Edwards, J.R., Jarvis, W.R., Tolson, J.S., Henderson, T.S., Hughes, J.M. and the National Nosocomial Infections Surveillance (NNIS) system. (1991). Trends in nosocomial blood stream infections in the United States, 1980-89. *Am. J. Med.* 91(3B): 86S-89S.
- Bannerman, T.L. (2003). Gram positive cocci: *Staphylococcus*, *micrococcus* and other catalase positive cocci that grow aerobically. *Manual of Clinical Microbiology*. 8th ed. 390-397.
- Miller, L. G. and Diep, B. A. (2008). Clinical practice: colonization, fomites, and virulence: rethinking the pathogenesis of community-associated methicillin-resistant *Staphylococcus aureus* infection. *Clin Infect Dis* 46, 752–760.
- Foster, T.J. (2004). The *Staphylococcus aureus* “superbug”. *J. Clin. Invest.* 114(12): 1693-1695.
- de Lassence, A., Hidri, N. and Timsit, J.F., et al. (2006). Control and outcome of a large outbreak of colonization and infection with glycopeptide-intermediate *Staphylococcus aureus* in an intensive care unit. *Clin Infect Dis*; 42:170-8.
- Hiramatsu, K., Kapi, M., Tajima, Y., Cui, L., Trakulsomboon, S. and Ito, T. (2005). Advances in vancomycin resistance: research in *Staphylococcus aureus*. *Frontiers in antimicrobial resistance: attribute to Stuart B Levy*. Ch 21. ASM press Washington DC.
- Mortara, L.A. and Bayer, A.S. (1993). *Staphylococcus aureus* bacteremia and endocarditis. *Infect. Dis. Clin. North Am.* 7: 53-68.
- Nema, V., Agrawal, R., Kamboj, D.V., Goel, A.K. and Singh, L. (2007). Isolation and characterization of heat resistant enterotoxigenic *Staphylococcus aureus* from a food poisoning outbreak in Indian subcontinent. *Int J Food Microbiol.*; 117(1):29-35.
- Ogston, A. (1883). *Micrococcus* poisoning. *J. Anat. Physiol.* 17: 317-324.
- Rotun, S.S., McMath, V., Schoonmaker, D.J., Maupin, P.S., Tenover, F.C., Hills, B.C. and Ackman, D.M. (1999). *Staphylococcus aureus* with reduced susceptibility to vancomycin isolated from a patient with fatal bacteremia. *Emerg Infect Dis.* 54: 147-149.
- Tenover, F.C. and Gaynes, R.P. (2000). The epidemiology of *Staphylococcus* infections. p. 414-421. In: Fischetti VA, Novick RP, Ferretti JJ, Portnoy DA, Rood JL (eds.), *Gram Positive Pathogens*. American Society for Microbiology. Washington DC.
- Patrick, Boerlin, Peter, Kuhnert, Daniela, Hüsey and Melchior, Schaellibaum (2003). Methods for Identification of *Staphylococcus aureus* Isolates in Cases of Bovine Mastitis. *Manual of Clinical Microbiology*. 10.1128/JCM.41.2.767-771
- Kateete, D.P., Kimani, C.N., Katabazi, F.A., Keng, A.O., Okee, M.S., Nanteza, A., Joloba, M.L. and Najjuka, F.C. (2010). Identification of *Staphylococcus aureus*: DNase and Mannitol salt agar improve the efficiency of the tube coagulase test. *Annals of clinical Microbiology and Antimicrobials*. doi:10.1186/1476-0711-9-23

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False identification of other microorganisms as