The Anti-Bacterial Activity of Minocycline against Methicillin Sensitive *Staphylococcus aureus* (MSSA) and Methicillin Resistance *Staphylococcus aureus* (MRSA)

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Abstract:

Methicillin sensitive and resistance *Staphylococcus aureus* infections were increased dramatically in Sudan in the few last years, both in community and hospital settings. This was attributed to the irrational use of antibiotics which caused a major raise in the mortality and morbidity rates. The objective of this research was to evaluate the anti-Bacterial activity of Minocycline against clinically isolated Methicillin sensitive *Staphylococcus aureus* (MSSA) and Methicillin resistance *Staphylococcus aureus* (MRSA), where the activity was compared to Vancomycin, Ciprofloxacin, and Gentamicin. The study followed a standardized *In vitro* microbiological assay techniques included well diffusion technique and broth dilution assays to determine the clear zone of inhibitions and minimum inhibitory concentration (MIC) respectively, for the previously mentioned antibiotics. Although Vancomycin is used as a first line of therapy in the treatment of MRSA infections, but Minocycline was found to be more active against both MRSA and MSSA than Vancomycin. Ciprofloxacin had a relatively good spectrum of activity against MRSA in addition to its well-known activity against MSSA thus, it should be considered as a good treatment option for MRSA and MSSA. Minocycline showed lower activity against MRSA and MSSA when it was compared to ciprofloxacin. Furthermore, MRSA and MSSA showed the highest resistance pattern against vancomycin compared with other antimicrobial agents. Therefore, Minocycline worth to be encouraged with *In vivo* tests and to be illustrated for registration by health authorities in Sudan for future use in the treatment of MSSA and MRSA infections.

Keywords: MSSA, MRSA, Minocycline, Anti-Bacteria activity, *Staphylococcus aureus*