Perbandingan metode uji antibakteri partikel nano zno terhadap staphylococcus aureus nbrc 100910 = Comparison of zno nanoparticle antibacterial test methods against staphylococcus aureus nbrc 100910

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Abstrak

Penelitian uji aktivitas antibakteri dari partikel nano ZnO pada konsentrasi 0,1%--1% terhadap bakteri Staphylococcus aureus NBRC 100910 telah dilakukan menggunakan beberapa metode uji. Metode uji yang dilakukan terdiri atas metode kualitatif, yaitu difusi agar menggunakan paper disc dan silinder serta metode kuantitatif, yaitu tube dilution dan agar dilution. Hasil uji menunjukkan zona hambat pertumbuhan Staphylococcus aureus mulai terbentuk pada konsentrasi 0,1% ZnO. Konsentrasi 0,1% ZnO juga merupakan konsentrasi minimum bakterisidal (KMB). Laju sintas bakteri menunjukkan bahwa pada jam ke-4 telah terjadi penurunan bakteri sebesar 89,15%. Analisis kandungan asam nukleat dari medium pertumbuhan pada jam ke-6 menunjukkan peningkatan (15,07%) yang menandakan adanya kerusakan sel akibat aktivitas antibakteri partikel nano ZnO yang diiringi dengan penurunan jumlah adenosine triphosphate (83,93%) yang diukur berdasarkan nilai relative light units (RLU).

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Antibacterial activity of 0,1%--1% ZnO nanoparticle against Staphylococcus aureus NBRC 100910 using several methods has been studied. The qualitative methods used were paper disc and cylinder diffusion, while the quantitative methods used were tube and agar dilution. The results showed that zone of inhibition started to appear at 0,1% ZnO concentration. Minimum bactericidal concentration (MBC) was also determined at the same concentration. The survival rate of bacterial cells showed a decrease of 89,15% after 4 hours of exposure. Analysis of nucleic acid compounds in growth medium indicated an increase by 15,07% after 6 hours of incubation, which was caused by cell leakage due to ZnO antibacterial activity. This result was also supported by decreasing amount of adenosine triphosphate (83,93%) which was measured by amount of relative light units.