

Ouabain Synergizes the Antimicrobial Activity of Aminoglycosides against *Staphylococcus aureus*

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Staphylococcus aureus is opportunistic pathogen which often causes nosocomial and community related infections with rapid emerging resistance due to unseemly use of antibiotics and now become a serious health issue. Ouabain (OBN) is a Na⁺/K⁺-ATPase inhibitor that leads to increase the heart contraction in patients with congestive heart failure. In the present work, we determined antimicrobial effect of OBN together with aminoglycosides *S. aureus* strains. As compare to individual dose, OBN synergizes the staphylocidal potency by 16 (0.25µg/mL), 8 folds (0.5µg/mL) and 16 folds (1.0µg/mL) of Gentamycin (GEN), amikacin (AMK); kanamycin (KAN), respectively. The cell viability was completely lost within 60 min with GEN (1µg/mL), KAN (2µg/mL) and 90 min with AMK (1µg/mL). This bactericidal effect was enhanced due to GEN uptake potentiated by 66% which led to increase the cell permeability. The biofilm adherence disrupted by 80 and 50% at 5 mg/mL and 1.5 mg/mL OBN and 50 and 90% biofilm formation was inhibited at 5 mg/mL (MBIC50) and 10mg/mL (MBIC90), respectively. Moreover, OBN with GEN further induced biofilm inhibition by 67 ± 5% at pH 7.0. Taken together, we established that OBN synergizes the antimicrobial activity of aminoglycosides.

Biography:

Antresh Kumar is Associate Professor, Department of Biochemistry, Central University of Haryana, Mahendergarh, India. His research is focused on to understand the pathogenic mechanism of Multidrug Drug Resistant (MDR) Staphylococcal and Candida related infections by employing Biochemical and transcriptional approaches. His research emphasized to find out a sustainable treatment either by using existing Therapeutics Molecule or by identifying new Antimicrobial Agents against *S. aureus*. Dr. Kumar has presented his work on different National and International platforms and also published his research in the peer-reviewed International Journals.