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Antibiotic resistance in ophthalmic infection

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Antibiotics were considered "miracle" drugs when they were presented in the middle of the 20th century. However, excessive use of antibiotics has long been a worry in the medical community-most specifically the development of antibiotic resistant especially against a systemic medicine (OR medication OR antibiotic?), but is it less problematic in ophthalmic field? Bacterial infections of the eye are common and ophthalmologists are spoilt (little harsh word) for choice with a variety of antibiotics available in the market which are mainly used topically, thereby help ophthalmologist to achieving high concentrations; often much above the Minimum Inhibitory Concentration (MIC) of antibiotics in ocular tissues during therapy. These high concentrations are effective in treating bacteria that are deemed resistance using standard interpretations of susceptibility. But the important question is whether systemic *in vitro* susceptibility standards accurately interpret for ocular infection as well. Until recently, ocular pathogens resistant to fluoroquinolones have been minimal but the pattern is currently alarming. Among the most common types of ocular infections, we need to know which one reflects arise in resistance. Also, if the current practice is enough to manage the ocular infection or reconsideration is required for future.

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Cross resistance between commonly used biocides and antibiotics in hospitals

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A concern about emergence of new antibiotic resistant strains in health care environment due to extensive exposure of hospital bacteria to sub-inhibitory concentrations of biocides has been expressed. Our aim was to reveal any possible link between adaptation to biocides and resistance to antibiotics in hospitals. A total of 66 clinical and environmental bacterial isolates; isolated from the Main University Hospital in Alexandria were screened for their susceptibility to 22 commonly used broad spectrum antibiotics and six biocides; Benzalkonium Chloride (BK), Cetrimide (CET); Chlorhexidine (CHX); povidone-iodine; sodium hypochlorite and dettol®. Then selected hospital isolates in addition to standard strains were adapted to the biocides by passing them in gradually increasing biocide concentrations. The maximum obtained Minimum Inhibitory Concentrations (MICs) were >3200 mg/L for BK and CET; >1000 mg/L for CHX. Cross resistance to antibiotics was then tested in the biocide adapted isolates using Stoke's method. Screening results revealed a moderate positive correlation between antibiotic resistance and biocide tolerance where Spearman correlation coefficient ranged between 0.376-0.278 ($p<0.05$). The stable adaptation to BK, CET and CHX resulted in reduced susceptibility towards certain antibiotics; amikacin, gentamicin, imipenem, ciprofloxacin, levofloxacin, chloramphenicol, ceftazidime, doxycycline, tetracycline, cefoperazone, cefotaxime and cefepime. In many cases, the observed cross resistance moved the strains from being "sensitive" to being "intermediately sensitive" or even "resistant" to antibiotics. Therefore, biocides should be handled with care in health care settings avoiding sub-lethal concentrations. Cross resistance between biocides and antibiotics can aggravate the existing problem of antibiotic resistance in the healthcare system.

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