

Multidrug resistance and its remedy

Souravh Bais

Rayat College of Pharmacy, India

Multidrug resistance is a condition enabling a disease-causing organism to resist wide variety of drugs or chemicals. Multidrug resistance is emerging in both eukaryotes as well as in prokaryotes. Resistance of microorganisms to many classes of antibiotics and other drugs has become a serious problem of public health. According to the world wide surveillance studies, multidrug resistance phenomenon is found in many species of bacteria, fungi and tumour cells mediated by the three mechanisms namely target modification, antibiotic inactivation or default of its accumulation within the cell and is responsible for exporting drugs from cells resulting in low ineffective concentration of the drug. The phenomenon of microbial multidrug efflux was first reported by Ball and McMurry for the efflux of tetracycline in *Escherichia coli*. Recently, an efflux pump has become increasingly recognized as a major component of resistance to many classes of antibiotics. Thus, the present review is an approach towards inhibition of efflux pumps. Efflux pumps are transport proteins involved in the extrusion of toxic substrates (including virtually all classes of clinically relevant antibiotics) from within cells into the external environment. Efflux pumps occur as either single-component or multicomponent systems. Some efflux pumps selectively extrude specific antibiotics such as macrolides, lincosamides and tetracyclins where as other, referred to as multidrug resistance pumps, expels a variety of structurally diverse anti-infective with different modes of action. To combat the menace of drug resistance, efflux pump inhibition may prove to be a challenging target. In this approach, the antibiotic is co-administered with an inhibitor that neutralizes the resistance and, consequently, the antibiotic is still useful, even in resistant organisms.

souravh2008.123@rediffmail.com