

ANTIOBIOTICS RESISTANCE & EFFLUX PUMP INHIBITORS BREAKTHROUGH

Helena Hamieh¹

Scientific supervisor: Zupanets K. O.²

¹Lebanese University faculty of public health, Beirut, Lebanon

² National University of Pharmacy, Kharkiv, Ukraine

elenamea77@outlook.com

Introduction. The Lebanese population faces the problem of the wrong attitude towards antibiotic consumption. It is wrongly considered as time saving, non-serious and free-of-consequences treatment approach. On the contrary, all of these factors contribute in raising the level of antibiotic resistance in a drastic manner subjecting many lives at risk. This problem is even more important since the numerous factors leading to the emergence and spread of multi-resistant strains remain uncontrollable today. Today we highlight the importance of educational awareness regarding controlled and appropriate use of antibiotics as well as the raising value of efflux pumps inhibitors.

Aim. Illustrations of low educational and socioeconomic levels of parents and individuals were identified as factors significantly associated with poor knowledge and misuse. Despite clear evidence on the limited role of antibiotics in upper respiratory infections, parents in Lebanon continue to misuse them. It also proves that such kind of social behaviour as well as medical behaviour has been spread amongst Syrian refugees as they become integrated within the Lebanese territory after the conflict and providing solutions for such consequences. The contribution of efflux pumps as well as biofilms and imposing strategies to stop their mechanism of action leading to a possible decline in antibiotics resistance. Hence, this is approved by the application of efflux pump inhibitors from various sources including the calcium channel blocker verapamil and other alternative therapeutic techniques.

Materials and methods. A cross-sectional study in Lebanon, Beirut and suburbs is conducted by collecting data from different individuals observing variables without influencing them based on statistical package for the social sciences. Methods to identify the factors that influence the knowledge, practice associated with the use of antibiotics, false ideas, and inappropriate practices assess the determinants of self-medication with antibiotics in the general population among buyers of antibiotics in pharmacies has been used.

Another study is conducted showing the action of efflux pump genes in conferring drug resistance to *Klebsiella* species and their inhibition as well as strategies to inhibit drug efflux.

Results and discussion. The studies proved that self-medication was significantly higher in men and more common in those with sore throats and unaware of the dangers of using antibiotics. In addition, self-medication was associated with amoxicillin. We found a high prevalence of inappropriate antibiotic prescriptions in Lebanon. In addition, efflux pump inhibitors as well as other applied techniques proved their ability to decrease antibiotics resistance with promising results.

Conclusions. Amoxicillin/clavulanic acid (69.7%) was the most prescribed antibiotic that had an influence on rising antimicrobial resistance in Lebanon. However, efflux pump inhibitors to stop or eliminate antibiotic resistance are a real breakthrough that will be poised to be the next global health concern. Alternative therapeutics application in this field is promising.