

Synthesis and Study of Some Compounds with Antibacterial Properties Obtained from Nitrofuran and Chitosan Derivatives

Viorel Prisacari¹, Diana Guranda¹, Ștefan Robu², Roman Rusnac²

¹ Nicolae Testemițanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

² State University of Moldova, Chisinau, Republic of Moldova

We report on possibilities to obtain new antibacterial substances based on chitosan polymer materials grafted with nitrofuran, isohydrafuril and furacilin derivatives. The antibacterial properties were assessed via the serial dilution method in liquid nutrient medium (2% meat peptone broth), followed by re-cultivation of standard Gram-positive and Gram-negative bacterial cultures on peptone agar for 24 hours. Both composites obtained on the basis of chitosan grafted with isohydrafuril or furacilin showed bactericidal activity against a wide range of Gram-positive and Gram-negative microorganisms, varying within the concentration of 75–300 μg/ml. Due to long-term 48 and 72-hour incubation of microbial cultures cultivated on peptone broth, obvious changes in increasing bactericidal activity of both composites were found over time. Thus, the antibacterial substances isohydrafuril and furatsilin among nitrofurans, grafted onto chitosan maleate, retain their bactericidal activity in the range of 75-300 μg/ml, have prolonged antibacterial activity and can be recommended as active substances in the development of new antibacterials.