Ion channels are responsible for regulating the translocation of various molecules across the bacterial cell membrane. Porin channels limit permeation of some drugs due to non-suitable size or charge distribution. It causes resistance to antibacterial agents, like β- lactames and fluoroquinolones leads to multidrug resistant (MDR).

In this work, translocation of Ofloxacin antibiotic through nanopore OmpF channel reconstituted in artificial planar bilayer was investigated by means of voltage clamp technique. We used Ofloxacin as fluoroquinolone antibiotic.

Our results suggest that presence of Ofloxacin antibiotic into the channel changed the gating behavior of OmpF simultaneous to ion current decrease. The channel sensitivity to the applied potential is increased that leads to channel closure at lower voltages. Zwitterionic form of Ofloxacin in pH=6.1 passes through the channel pore that is observed by reduced current through the OmpF porin.

Based on some investigations, there is special arrangement of residues at the constriction zone leads to create potential well. This induced potential well enhances antibiotic molecule interaction to specific residues that causes reducing of channel lumen size and inhibiting the channel complete closure. In presence of antibiotic, channel conductance isn’t completely zero.