Microcin E492 forms ion channels in phospholipid bilayer membranes

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Microcin E492, a polypeptide antibiotic, has been shown to have an Mr, of 6,000 by urea-SDS-polyacrylamide gel electrophoresis of the fluorescently labelled compound. It is known that the bactericidal action of microcin involves a loss of the transmembrane potential. In this study we show that microcin forms cation-selective channels in planar phospholipid bilayers. The channels have two main conductance states the current-voltage curves of which rectify. The reversal potentials measured under biionic conditions indicate a permeability sequence of $NH_4^+ > K^+ = Rb^+ = Cs^+ > Na^+ = Li^+ > Tris^+$. The results suggest that membrane potential dissipation induced by microcin is a consequence of the formation of pores in the bacterial membrane.