SINGLE CHANNEL CONDUCTANCE OF MONAZOMYCIN

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Monazomycin is a polyene like antibiotic with the proposed empirical formula $C_{62}H_{119}O_{20}N$ produced by a streptomyces. (Akasaki et al. 1963) It contains one amino group which gives a positive charge over the pH range of our experiments. (Mitscher et al. 1967) As shown by (Muller and Anderson (1975)) and (E. Bamberg and K. Janko (1976)), monazomycin is a channel-former. A single channel analysis was made with BLM of PC 16:4/n-decane.

I. Analysis of the single channel conductance

If monazomycin is added to the side of positive voltage of the cuvette, only one population of channels is obtained. After a certain time, which depends on the concentration of monazomycin in the electrolyte, the number of channels increases and the single event can no longer be resolved. When the polarity of the applied voltage is reversed afterwards, an inactivation is measured and several states with higher conductance can be observed. Comparison of such two experiments shows that the conductance of the one population is equal to the conductance of the lowest state in the inactivation experiment.
This suggests that this state might be an elementary event. Referring to the lowest state, the activation energy for the ion transport was determined to be 12 kcal/mol. The lowest conductance of that state shows no dependence on the applied voltage and is proportional to the electrolyte concentration in the range of 1M up to 3M CsCl.

II. Analysis of the lifetime of the single channel

With the actual resolution both experiments show a single exponential decay of the single channel lifetime. For the applied voltage U>100mV there is no evidence for a dependence of the lifetime from the applied voltage.
The activation energy was determined to be 13 kcal/mol.

Ref.

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