Product Information

99373 Potassium ionophore I - Cocktail B

(Potassium-selective membrane solution for microelectrodes (low impedance))
Selectophore®, function tested

Electrochemical Transduction

Microelectrodes

Application 1 and Sensor Type[1-5]

Assay of K^+ activity in extra- and intracellular (single cell) liquids with K^+ microelectrodes based on Potassium ionophore I. Potassium ionophore I – Cocktail B shows low impedance and differs from Potassium ionophore I – Cocktail A in its selectivity coefficients.

Potassium ionophore I – Cocktail B (99373)

Cocktail Composition:

5.0 wt%	Potassium ionophore I (60403)
93.0 wt%	1,2-Dimethyl-3-nitrobenzene (40870)
2.0 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)

Recommended Cell Assembly

Reference || sample solution || cocktail | 0.01 M KCl | AgCl, Ag

Electrode Characteristics and Function

Selectivity coefficients $\log K_{K,M}^{Pot}$ as obtained by the separate solution method (0.1 M solutions of the chlorides).

$\log K_{K,Li}^{Pot}$	-4.2	$\log K_{K,Ca}^{Pot}$	-4.9
$\log K_{K,Na}^{Pot}$	-3.9	$\log K_{K,Acetylcholine}^{Pot}$	-3.5
$\log K_{K,Mg}^{Pot}$	-4.6		

Slope of linear regression:	57.8±1.2 mV/dec (10^{-4} to 10^{-1} KCl)
Detection limit (KCl, ion background of 140 mM Na^+):	log a_K ~-4.8
Response time:	time constant of electrode response <1 s
Electrical resistance, tip diameter ~1 µm:	$1.2 \cdot 10^{10}$ Ω[3]

[1] Preparation and use of micro- and macroelectrodes for measurement of transmembrane potentials and ion activities. D. Ammann, P. Caroni, Methods in Enzymol. 172, 136 (1989).
[2] Valinomycin-based K^+ selective microelectrodes with low electrical membrane resistance. D. Ammann, P. Chao, W. Simon, Neurosci. Let. 74, 221 (1987).
[3] H. Shimazaki, Thesis, University of Georgia, Athens, Georgia (1983).
[4] Light-evoked increases in extracellular K^+ in the plexiform layers of amphibian retinas. C. J. Karwoski, E. A. Newman, H. Shimazaki, L. M. Proenza, J. Gen. Physiol. 86, 189 (1985).
[5] Internal potassium activity in ferret ventricular muscle. E. C. Reverdin, A. Illanes, J. A. S. McGuigan, Quart. J. Exp. Physiol. 71, 451 (1986).