.

The Regulation of Brain Mitochondrial Calcium-Ion Transport

THE ROLE OF ATP IN THE DISCRIMINATION BETWEEN KINETIC AND

MEMBRANE-POTENTIAL-DEPENDENT CALCIUM-ION EFFLUX MECHANISMS

David G. NICHOLLS and Ian D. SCOTT Neurochemistry Laboratory, Department of Psychiatry, Ninewells Medical School, University of Dundee, Dundee DD1 9SY, Scotland, U.K.

(Received 20 August 1979)

Mitochondria from guinea-pig cerebral cortex incubated in the presence of P. or acetate

are unable to regulate the extramitochondrial free Ca²⁺ at a steady-state which is

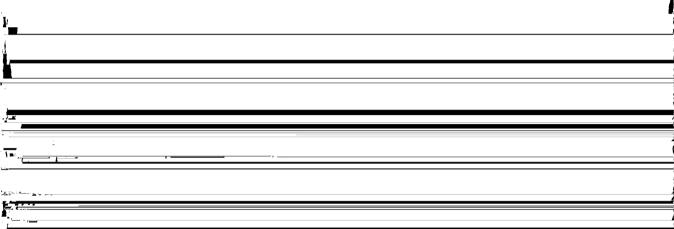
٦	
ļ	
۰,	AL

è-		
•		
1		

834	
•	
	F
<u>j</u>	
l,	
Υ.	
<u>د ــــــــــــــــــــــــــــــــــــ</u>	
'	
,	
× 4	
\$~4).	
<u>.</u>	
🔺 and a state of the state of	
decrease to observe potential-dep	endent efflux (Error' mitrophondria (i.e. those not contained
-	
×	
r	
<u>.</u>	
	
A	
k	
X I XV	
· • •	
<u>1</u>	
ų į	
ä	

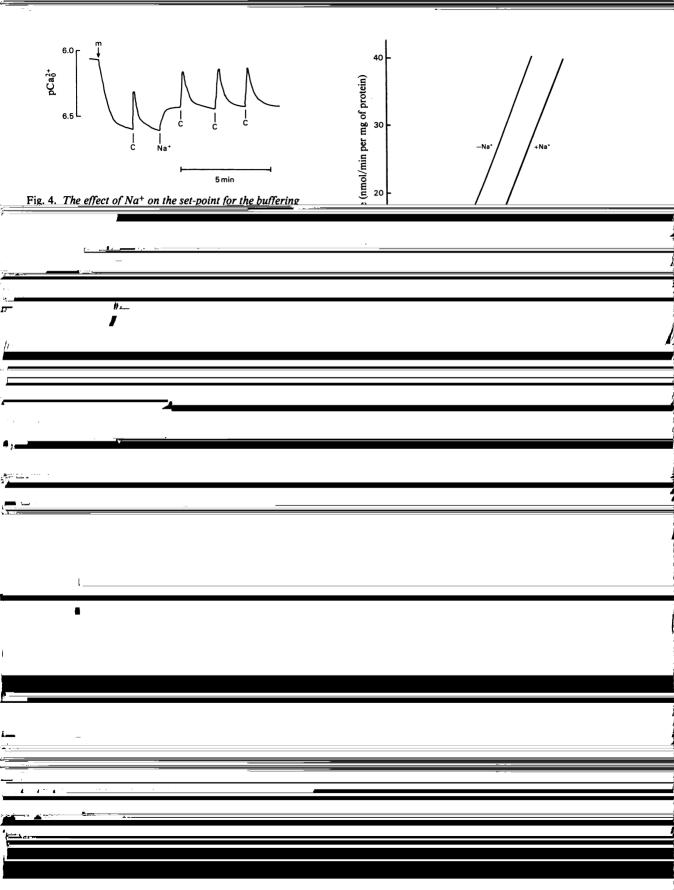
ATP AND Ca²⁺ TRANSPORT

5	* =		 - · · · · · · · · · · · · · · · · · · ·	
1				
	*			
Þ-	-	•-		
۰.				



I			
ľ			
, F			
- <u></u>			
,			
21 1 <u>-</u>			
<u>}-</u>			
. 1			
1			
,			
×			
	· · · · · · · · · · · · · · · · · · ·		
		7	





1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of. Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106mV to 92 mV (Fie. 3) finding. that. added_adenine_nucleotides_were_not	5 mm	'massive-loading' of the matrix with in excess of	to greatly enhance ΔpH and decrease Δw (see also
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δ <i>w</i> in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3		_	v
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δ <i>w</i> in massive-loading experiments, and because of the continues to decrease, from 106 mV to 92 mV (Fig. 3	s. <u> </u>	[3 ⁻	
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δ <i>w</i> in massive-loading experiments, and because of the continues to decrease, from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δ <i>w</i> in massive-loading experiments, and because of the continues to decrease, from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments. and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3)	ř		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3		-	
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	Ţ		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	, 		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	<u></u>		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	P ' !	k	
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	2 <u> </u>		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	t		
1967). Because of the high Ca ²⁺ concentrations used time-dependent loss of Ca ²⁺ from the matrix. Δw in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3		-	
in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			
in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3			Y +
in massive-loading experiments, and because of the continues to decrease. from 106 mV to 92 mV (Fig. 3	,,,,	1067) Because of the high Co ²⁺ concentrations used	time dependent loss of Co2t from the mateix Au
finding that added adenine nucleotides were not of Ramachandran & Bvgrave. 1978). These mem-	-	in massive-loading experiments, and because of the	<u>continues to decrease. from 106 mV to 92 mV (Fig. 3</u>
		finding that added adenine nucleotides were not	of Ramachandran & Bygrave. 1978). These mem-
	· · · · · · · · · · · · · · · · · · ·		
	<u> </u>		7 . •

ATP AND Ca²⁺ TRANSPORT

×

are less than 0.2 nmol of Ca ²⁺ /min ner mg of particle	Lehninger, A. L., Carafoli, E. & Rossi, C. S. (1967) Adv.
r 	
ν - ματ	
الله الله الله الله الله الله الله الله	
a ⁻	
-	
1	
1	