A Dynamic Dendritic Refractory Period Regulates Burst Discharge in the Electrosensory Lobe of Weakly Electric Fish

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Materials and Methods

Preparation of tissue slices. Apteronotus leptorhynchus (B) 26 28 C. A 0.05% C C A C E (., 1994; , 2000). E C. F ( ): 124 C , 2.0 C , 1.25 $_2$, $_4$, 1.5 C C $_2$, 1.5 $_4$, 24 C $_3$, 10 D- $_2$, 7.4. E . (1994). A. (,) (,).

Intracellular recordings. (n 68). 200 (n 42). 69 20.7 59 24.5 (n 20 ; D). 2 0.5 A A (C E D , C ,) (C E D ; , ; C D , , C). A D, . D (,).

B . B ( ) (A) (*AHP* *AHP* $_1$)^2. A A A A A .

Models. A E (D ., 2001) (D ., 2001, 2002, 2003; , 2002). :

$$\frac{dV}{dt} \begin{cases} 0 & t \quad t_n \quad r_s \\ I \quad V \quad s t \quad t_n, \quad b t_n \quad s t \quad t_n, & t \quad t_n \quad r_s \quad t_n \quad t_{n 1} \quad r_d^n \\ I \quad V & t \quad t_n \quad r_s \quad t_n \quad t_{n 1} \quad r_d^n \end{cases} \tag{1}$$

$$\frac{db}{dt} \quad b/$$

[illegible] r_s. [illegible] s, E [illegible] 6 [illegible]
[illegible] :

$$\frac{dV}{dt} \square I \square V \square \square \Big[\square t \square r_s \square$$

C $^{2□}$-

Shaker □

A .

3.3 3.1 □ .

EA □

K$^+$ channels differentially control burst discharge

4-A EA

DA

(

., 2001). EA-

□

(*F–I*) EA .

20 250 (F . 4*A*,*B*). E 1 EA

450% (n □ 17), *F–I*

(F . 4*A*) (n □ 8; p □ 0.05

). A ,

0.8 □ 0.19 A 0.48 □ 0.12 A EA

(F . 4*A*, *dashed lines*) (p □ 0.05; n □ 8).

F–I

60% EA (p □

0.05; n □ 8),

A EA

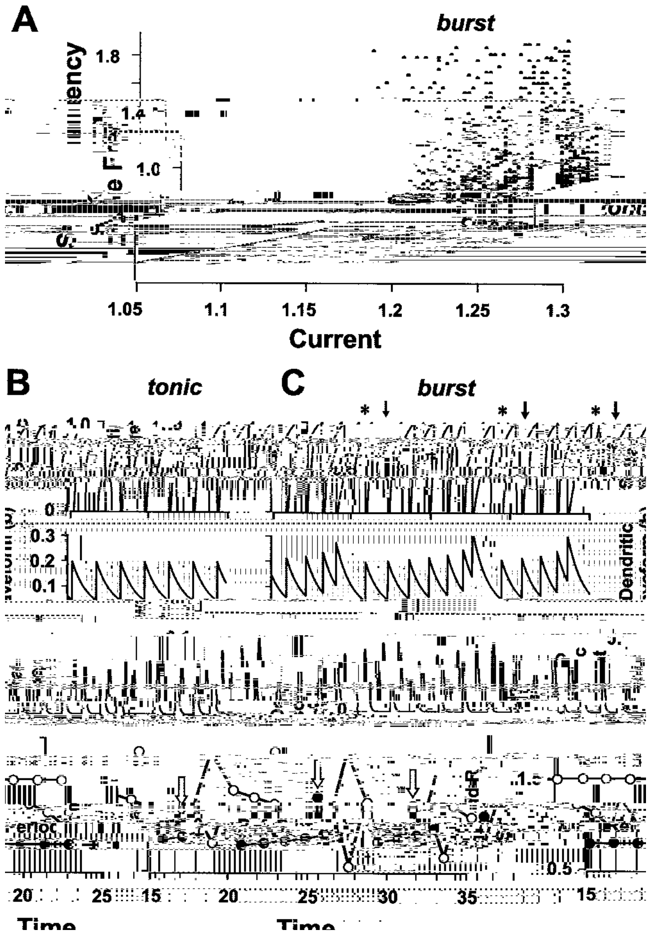
[illegible] DA .

, - (F . 6*A*) (*n* □ 9). A , , - (., 1994). A - □2.5 , 3 8.8 DA (F . 6*B*) (*n* □ 10). DA (., 1994; , 2000; D ., 2001).

, - , - (, 2000). D 4(9 3202.4(4 3 02.49.2( )2.49.2( )-.49.2( )-.49.2(.

,

6,



F (F . 8*A*,*B*). F 4*C* F 8*A*,*B* (E . 9).

F 8*C*,*D* (F . 8*C*). (F . 8*C*). (F . 8*D*).

Discussion

Spike repolarization sets the stage for burst discharge

EA- DA EA DA 3 EA.

( ). (F)

A dynamic dendritic refractory period is involved in regulating burst discharge

F

E

200 (., 1994).

200 . A

, . F

(D ., 2001).

3.3

(., 2001).

(C ., 1997; ., 1997; ., 1999). E ( )

C^2

I

DA (D ., 2003).

[illegible] (A[illegible]., 2000; [illegible], 2000; [illegible], 2001; [illegible]., 2002). A[illegible]