# Supplementary Data

## Enhanced Selectivity and Stability of Ruthenium Purple-Modified Carbon Fiber Microelectrodes for Detection of Hydrogen Peroxide in Brain Tissue

Ana Ledo[1,2], Eliana Fernandes[1], Christopher M.A. Brett[3], Rui M. Barbosa[1,2]

[1] University of Coimbra, Faculty of Pharmacy, Azinhaga de Santa Comba, 3004-548 Coimbra, Portugal

[2] Center for Neuroscience and Cell Biology, University of Coimbra, Faculty of Medicine, Rua Larga, 3004-504 Coimbra, Portugal

[3] University of Coimbra, Department of Chemistry, Faculty of Sciences and Technology, 3004-535 Coimbra, Portugal

**Contents:**

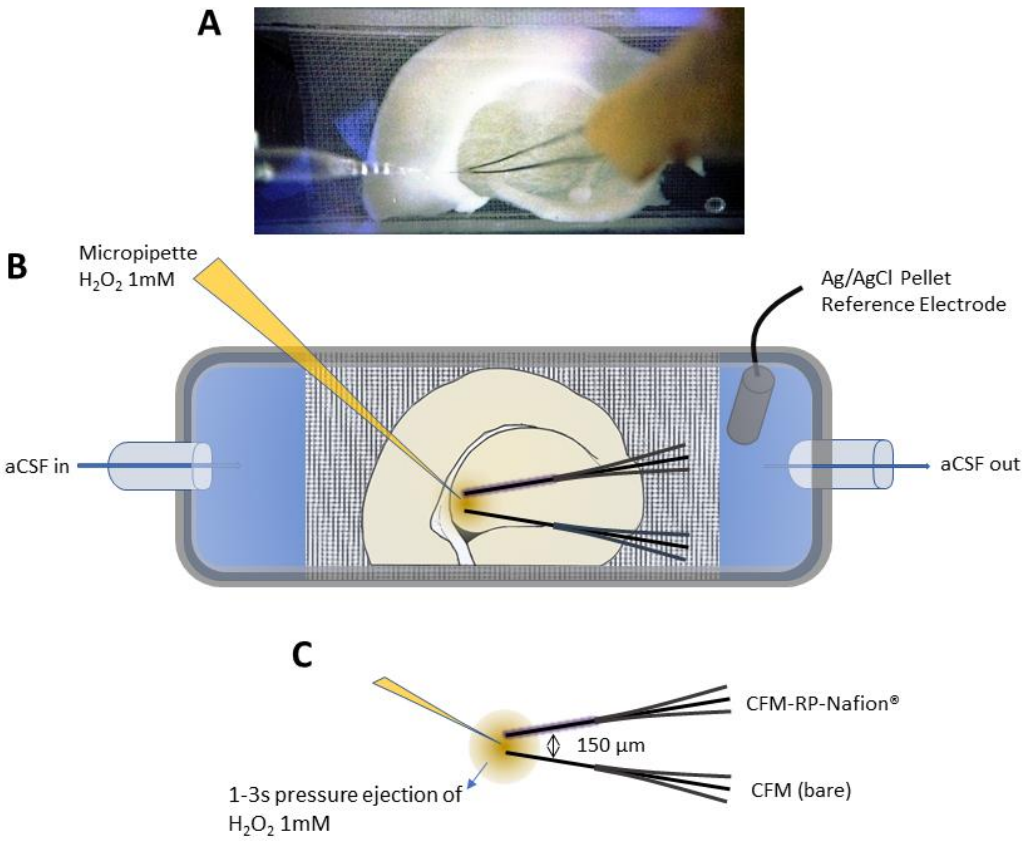


**Figure S1 –** Experimental setup for electrochemical recording in striatal slices. A) Photograph of the slice in the perfusion chamber showing an array of two microelectrodes (right) and a glass micropipette (left) inserted into the dorsal medial striatum; B) schematic representation of the striatal slice in the recording chamber, perfused with aCFS at 32 ºC, showing microelectrode array (right) and micropipette (left); C) Detail of microelectrode and micropipette arrangement.

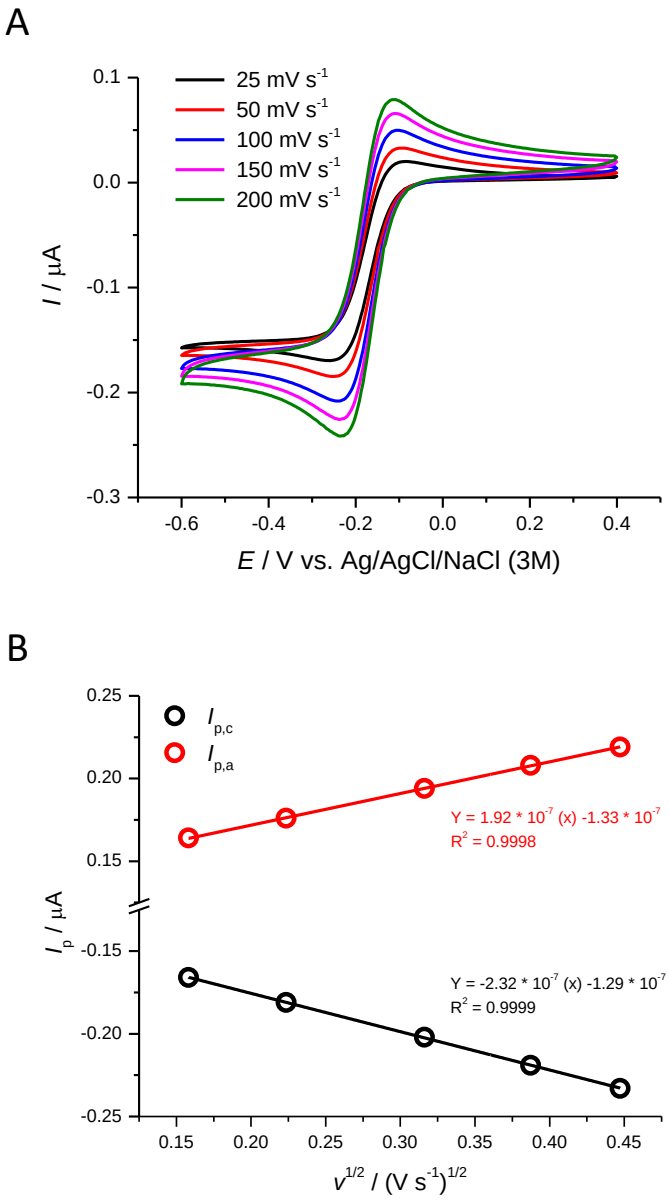


**Figure S2 –** Reversible Redox Reaction of Ru(III) $(NH_3)_6$ in 0.5 M KCl at increasing scan rates (A) and respective Ip vs. $v^{1/2}$ plot for determination of the electrochemical surface area of the CFM.

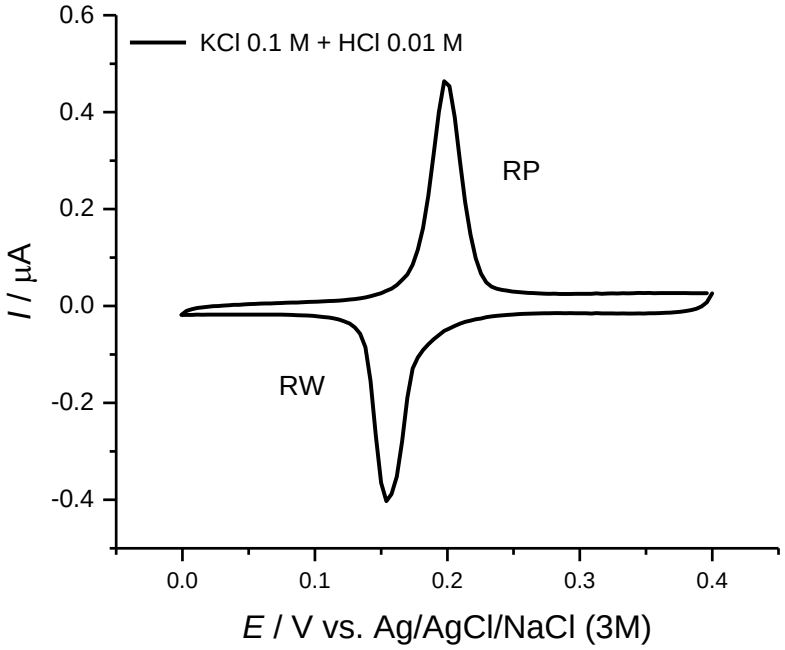


**Figure S3** – Cyclic Voltammogram of a CFM-RP obtained in 0.1 M KCl + 0.01 M HCl, at a scan rate of 50 mV $s^{-1}$. RP – ruthenium purple; RW – ruthenium white.

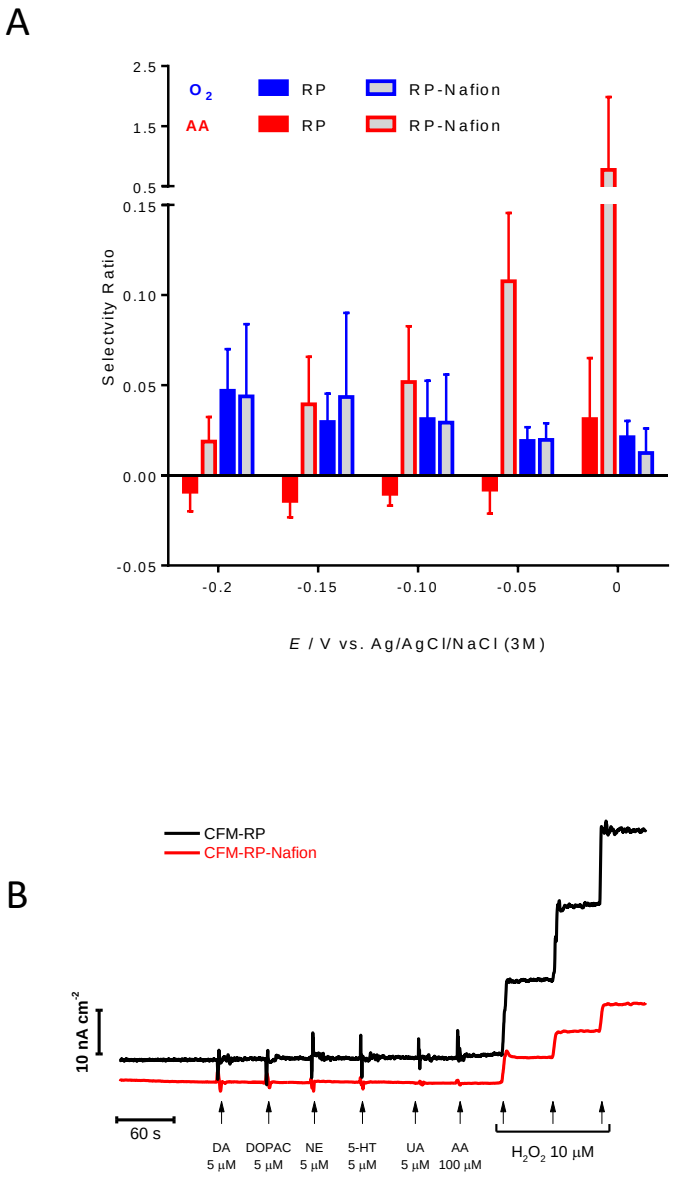


**Figure S4** – Selectivity ratio for $O_2$ and ascorbate as a function of applied potential, calculated for CFM-RP and CFM-RP-Nafion® (A). Amperometric recording for a CFM-RP (black) and CFM-RP-Nafion® (red) at optimal applied potential (-0.1 and -0.2 V vs. Ag/AgCl, respectively) showing no response for the successive addition of dopamine (DA), 3,4-Dihydroxyphenylacetic acid (DOPAC), norepinephrine (NE), serotonin (4-HT) uric acid (UA) and ascorbic acid. Addition of $H_2O_2$ produced the expected response (B).