

Hypoxia-inducible factor 1 protects hypoxic astrocytes against glutamate toxicity

Yomna Badawi^{*†}, Prabhu Ramamoorthy[†] and Honglian Shi^{*†1}

^{*}Neuroscience Program and Department of Pharmacology and Toxicology, University of Kansas, Lawrence, KS 66045, U.S.A.

[†]Department of Pharmacology and Toxicology, University of Kansas, Lawrence, KS 66045, U.S.A.

Cite this article as: Badawi Y, Ramamoorthy P and Shi H (2012) Hypoxia-inducible factor 1 protects hypoxic astrocytes against glutamate toxicity. ASN NEURO 4(4):art:e00090.doi:10.1042/AN20120006

Key words: brain ischaemia, cell viability, glutamate, glutathione, hypoxia-inducible factor 1, stroke.

SUPPLEMENTARY DATA

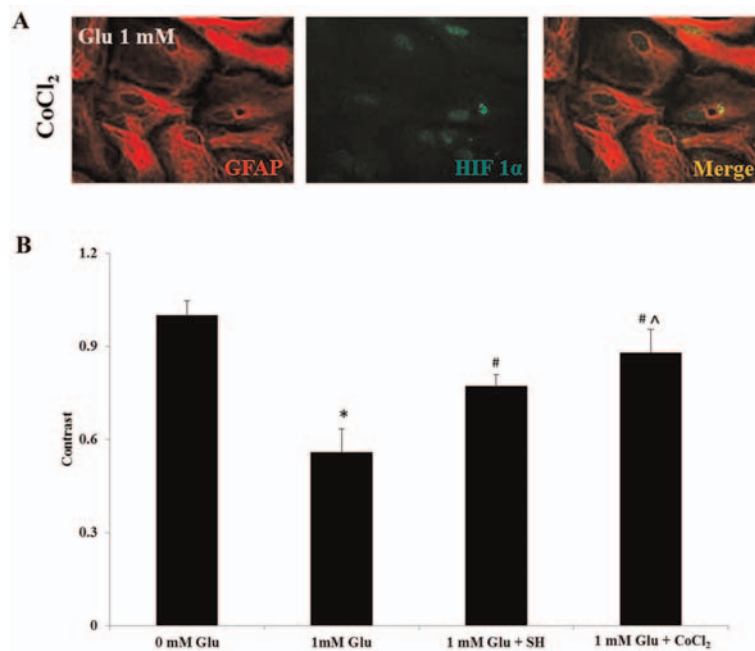


Figure S1 CoCl₂ (cobalt chloride) further reduces astrocyte damage induced by Glu
(A) Immunostaining characterization of cultured rat cortical astrocytes. Representative images depicting GFAP (red) and HIF-1α (green) in astrocytes treated with 0.3 mM CoCl₂ and 1 mM glutathione under N (normoxia, 21% O₂) for 3 h. **(B)** Quantification of morphology using one of the 13 features computed from each cell to measure and compare texture. Astrocytes were treated with 0 and 1 mM Glu under N (normoxia, 21% O₂), 1 mM Glu exposed to SH (severe hypoxia, 0.1% O₂) and 0 mM CoCl₂ and 1 mM Glu under normoxia (N, 21% O₂) for 3 h. **P*<0.05 versus 0 mM Glu under N, #*P*<0.05 versus 1 mM Glu under N, ^*P*<0.005 versus 1 mM Glu under N (*n*=3).

¹ To whom correspondence should be addressed (email hshi@ku.edu).

Abbreviations: BSO, L-butathione sulfoximine; CNS, central nervous system; DAPI, 4',6-diamidino-2-phenylindole; DMEM, Dulbecco's modified Eagle's medium; ENT-1, equilibrative nucleoside transporter 1; EPO, erythropoietin; FBS, fetal bovine serum; GFAP, glial fibrillary acidic protein; Glu, glutamate; GSH, reduced glutathione; HBSS, Hanks balanced salt solution; HIF-1, hypoxia-inducible factor-1; HO-1, haem oxygenase 1; HSP, heat-shock protein; LDH, lactate dehydrogenase; MCB, monochlorobimane; MTT, 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2H-tetrazolium bromide; ROS, reactive oxygen species; VEGF, vascular endothelial growth factor; YC-1, 3-(5-hydroxymethyl-20-furyl)-1-benzylindazole; 2Me2, 2-methoxyoestradiol.

© 2012 The Author(s) This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial Licence (<http://creativecommons.org/licenses/by-nc/2.5/>) which permits unrestricted non-commercial use, distribution and reproduction in any medium, provided the original work is properly cited.