Neuropsychopharmacology (2006) 31, 2567

www.neuropsychopharmacology.org

Letter to the Editor

Olanzapine and S100 Proteins

Hari Manev*[,1] and Radmila Manev[1]

[1]*The Psychiatric Institute, Department of Psychiatry, University of Illinois at Chicago, Chicago, IL, USA*

Neuropsychopharmacology (2006) **31,** 2567. doi:10.1038/sj.npp.1301186

Sir

In their recent paper, Fatemi *et al* (2006) reported on differential gene expression in the frontal cortex of rats chronically treated with olanzapine. They noted that two genes from the family of S100 proteins, S100A8 and S100A9, were significantly upregulated by olanzapine; S100A8 was increased at least twofold and S100A9 fourfold. Olanzapine is typically used to treat schizophrenia, bipolar disorder, and some forms of depression. Interestingly, it was recently suggested that an upregulation of S100 proteins might be common to antidepressant treatments (Manev and Manev, 2006).

The S100 protein family, which comprises 19 members, most of which are expressed in the brain (Donato, 1999), has been studied for its putative role in neurodegeneration (Businaro *et al*, 2006) and depression (Hetzel *et al*, 2005). A report by Whitaker-Azmitia *et al* (1993) pointed to a link between antidepressants and the glia release of S100B protein. Antidepressants were also shown to be capable of increasing the expression of S100B (Akhisaroglu *et al*, 2003). Subsequently, it was found that S100A10 protein content is lower in the postmortem brain of depressed subjects compared to samples from nondepressed controls, whereas experimental animals treated with antidepressants had elevated brain levels of S100A10 (Svenningsson *et al*, 2006).

The new information published by Fatemi *et al* (2006) provides additional impetus to research the putative role of S100 proteins in the pathobiology of neuropsychiatric disorders and in the mechanisms of action of psychotropic drugs.

REFERENCES

Akhisaroglu M, Manev R, Akhisaroglu E, Uz T, Manev H (2003). Both aging and chronic fluoxetine increase S100B content in the mouse hippocampus. *Neuroreport* **14**: 1471–1473.

Businaro R, Leone S, Fabrizi C, Sorci G, Donato R, Lauro GM *et al* (2006). S100B protects LAN-5 neuroblastoma cells against Abeta amyloid-induced neurotoxicity via RAGE engagement at low doses but increases Abeta amyloid neurotoxicity at high doses. *J Neurosci Res* **83**: 897–906.

Donato R (1999). Functional roles of S100 proteins, calcium-binding proteins of the EF-hand type. *Biochim Biophys Acta* **1450**: 191–231.

Fatemi SH, Reutiman TJ, Folsom TD, Bell C, Nos L, Fried P *et al* (2006). Chronic olanzapine treatment causes differential expression of genes in frontal cortex of rats as revealed by DNA microarray technique. *Neuropsychopharmacology* [E-pub ahead of print].

Hetzel G, Moeller O, Evers S, Erfurth A, Ponath G, Arolt V *et al* (2005). The astroglial protein S100B and visually evoked event-related potentials before and after antidepressant treatment. *Psychopharmacol (Berlin)* **178**: 161–166.

Manev H, Manev R (2006). Nomen est Omen: do antidepressants increase p11 or S100A10? *J Biomed Discov Collab* **1**: 5.

Svenningsson P, Chergui K, Rachleff I, Flajolet M, Zhang X, Yacoubi ME *et al* (2006). Alterations in 5-HT_{1B} receptor function by p11 in depression-like states. *Science* **311**: 77–80.

Whitaker-Azmitia PM, Clarke C, Azmitia EC (1993). Localization of 5-HT_{1A} receptors to astroglial cells in adult rats: implications for neuronal-glial interactions and psychoactive drug mechanism of action. *Synapse* **14**: 201–205.

*Correspondence: Dr H Manev, The Psychiatric Institute, Department of Psychiatry, University of Illinois at Chicago, 1601 West Taylor Street, MC912, Chicago, IL 60612, USA, Tel: +1 312 413 4558, Fax: +1 312 413 4569, E-mail: HManev@psych.uic.edu
Received 15 May 2006; accepted 10 July 2006
Online publication: 13 July 2006 at http://www.acnp.org/citations/Npp071306060320/default.pdf