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### Asenapine Effects On Peroxidation and Calcium Movements in HL-1 Cells

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**Introduction** Bipolar patients are at higher risk for cardiovascular morbidity and mortality than their counterparts in the general population. In a recent *in vitro* study, Asenapine, a new antipsychotic for the treatment of mania/mixed mania, was found to keep physiological endothelial function by activation of eNOS-related NO release and to protect endothelial cells against peroxidation by interference with mitochondria, apoptosis and cell survival.

**Objectives** To examine the cardiac protective effects elicited by Asenapine against peroxidation and on the Ca<sup>2+</sup> movements.

**Methods** In HL-1 that had undergone oxidative stress by 20 min hydrogen peroxide the effects of 30 min pre-treatment with Asenapine on survival and proliferation will be examined. In Fura-2AM loaded HL-1 we will next analyze the effects of Asenapine on Ca<sup>2+</sup> movements and the related involvement of cAMP/PKA and PLC pathways, CaMKII, L and T type Ca<sup>2+</sup> channels and 5HT<sub>1A</sub> receptors. The role of 'capacitative" Ca<sup>2+</sup> entry, plasma-membrane Ca<sup>2+</sup> pump inhibitor (PMCA) and Na<sup>+</sup>/Ca<sup>2+</sup> exchanger will be analyzed. Changes of membrane potential caused by interference with K<sup>+</sup> channels will be examined, as well.

**Results** We expect to find a proliferative and anti-peroxidative effect of Asenapine in HL-1 cells. Asenapine could also affect Ca<sup>2+</sup> movements through cAMP/PKA and PLC-dependent signalling and the involvement of 5HT<sub>1A</sub> receptors. The effects of Asenapine could also be related to changes of plasma membrane by interference with K<sup>+</sup> channels and the modulation of PMCA activity and Na<sup>+</sup>/Ca<sup>2+</sup> exchanger.

**Conclusions** We expect to further confirm the protective effect of Asenapine against peroxidative injuries. Implications will be discussed