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**Elevated serum superoxide dismutase and thiobarbituric acid reactive substances in bipolar disorder during mood episodes and in schizophrenia**

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**Introduction:** There is increasing evidence that oxidative stress may play a role in the pathophysiology of both schizophrenia and bipolar disorder (BD). We compared serum Superoxide dismutase (SOD) and thiobarbituric acid reactive substances (TBARS) measured in depressive, manic and euthymic bipolar patients, in chronically medicated schizophrenic (SZ) patients and a group of healthy controls.

**Methods:** The sample consisted in 97 chronically medicated SZ outpatients, 84 patients with BD (21 depressed 32 manic and 31 euthymic), fulfilling DSM-IV diagnostic criteria, and 32 healthy controls. Demographic and clinical data (age of onset, medication) were assessed. ANOVA was performed to analyze variance between groups and multiple comparisons between groups were assessed by Tukey test.

**Results:** Serum SOD (U/mg protein) levels were significantly increased ( $P < 0.001$ ) in manic ( $7.44 \pm 3.88$ ) and depressed ( $6.12 \pm 4.64$ ) BD patients and SZ ( $9.48 \pm 4.51$ ) when compared to either controls ( $1.81 \pm 0.63$ ) or euthymic ( $2.75 \pm 1.09$ )BD patients. TBARS (mol/l) levels were significantly higher in the SZ group ( $4.95 \pm 1.56$ ,  $P = 0.016$ ), bipolar euthymic ( $6.36 \pm 1.46$ ,  $P < 0.001$ ), bipolar manic ( $7.54 \pm 1.74$ ,  $P < 0.001$ ), and bipolar depressed patients ( $5.28 \pm 1.54$ ,  $P = 0.028$ ) compared to controls ( $3.96 \pm 1.51$ ).

**Discussion:** Our findings show an increasing gradient of SOD levels from controls to schizophrenic patients, passing through euthymic, depressed and manic bipolar patients. There is evidence that acute illness in SZ and BD, especially in mania, is neurotoxic. SOD levels as a state marker is in line with the findings of this study. Oxidative biology is a promising avenue for intervention in both schizophrenia and bipolar disorder.

**Keywords:** bipolar disorder, schizophrenia, oxidative stress