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MARKERS OF OXIDATIVE STRESS IN BIPOLAR DISORDER AND IN SCHIZOPHRENIA

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There has been strong evidence in recent years that oxygen free radicals may play an important role in the pathophysiology of schizophrenia and bipolar disorder. More recent evidence of altered antioxidant defenses in major mental illnesses has been accumulating. Much of the focus on antioxidant defense mechanism has been on the key scavenging antioxidant enzymes: Superoxide dismutase (SOD), Catalase (CAT) and Glutathione peroxidase (GSH-Px). Of these, SOD activity has been the most frequently examined.

The imbalance between antioxidant and oxidant mechanisms increases what is called oxidative stress, when the oxygen free species react and could damage lipids, proteins, carbohydrates and DNA. Lipids are the main compound of cellular membrane and the oxygen free radicals reaction to them is called lipid peroxidation. Several plasma lipid peroxides, like MDA, are measured by Thiobarbituric acid reactive substances (TBARS). Increased levels of TBARS have been reported in the plasma of drug-free and medicated bipolar disorder and schizophrenic patients. It is hypothesized that psychotic symptoms seen in both disorders might be a consequence of peroxidative injury to membrane phospholipids. Moreover, neuronal functioning is affected by this injury either by changes in membrane fluidity or by alterations in membrane receptors, which can cause neurotransmitter uptake and release impairment and even cell death.

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