

# PSYCHIATRY AND PSYCHOLOGICAL DISORDERS

May 20-21, 2019 | Rome, Italy

J Clin Psychiatry Cog Psychol 2019, Volume 3

## NEUROMELANIN'S INTRINSIC PROPERTY TO DISSOCIATE THE WATER MOLECULE, AS CHLOROPHYLL IN PLANTS AND ITS IMPLICATIONS IN DEMENTIA AND PARKINSON'S DISEASE

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Progressive degeneration of dopaminergic neurons in the zona compacta of the substantia nigra is characteristic of neuro-degenerative diseases as Alzheimer's disease, Parkinson's disease and Huntington's disease. The causes remain unclear, it has been proposed increased level of nigral iron and secondarily major production of hydroxyl radical, increased Mn superoxide dismutase activity; midbrain levels of reduced glutathione diminished, increased oxidative damage in midbrain, including lipid peroxidation, protein oxidation and oxidation of DNA; and finally, increased catechol oxidation in midbrain. Excessive oxidative stress in midbrain has several deleterious outcomes in nigral neurons. It remains unclear whether oxidative damage is restricted to Substantia nigra neurons and the primary cellular targets of oxidative damage are a major consequence of increased ROS production is inhibition of mitochondrial function. However, the unsuspected intrinsic property of melanin to dissociate the water molecule as chlorophyll in plants opens a new panorama in the gloomy environment of oxidative stress. This is melanin transforms light into chemical energy through dissociating the water molecule, like plants thereby molecular hydrogen is produced, considered the best-known antioxidant and the main energy carrier in the universe. The energy that the melanin requires to transform liquid water into its gaseous components is captured from visible and invisible light; and the substrate for the process is abundant, since the water molecule constitutes 70% of the body weight. It is to be expected that by normalizing the function of neuro melanin, the available molecular hydrogen increases, which would substantially neutralize the damage caused by elevated levels of oxygen radicals in patients with neurodegenerative diseases. The unexpected bio-energetic role of neuromelanin breaks in thousand pieces the sacrosanct role of glucose as source of energy of CNS, allowing new concepts about biology of neurodegenerative diseases as Alzheimer's, Parkinson and affective disorders.