

Oxidative Stress

All living cells try to maintain a normal reduced environment. When this state is lost due to the production of reactive oxygen species (ROS) like peroxides and free radicals, there is considerable damage to the cell components like proteins, lipids and DNA. These cells are thus under oxidative stress, which disturbs the equilibrium between the products of such ROS and the cells capacity to steadily detoxify these reactive intermediates, and also repair the damage that has been caused to them. These oxidizing species include the more reactive ones like free radicals and peroxides and the less reactive ones like superoxides. The more reactive ones cause permanent cell damage which eventually triggers apoptosis and the greatest levels of stress triggers necrosis. The less reactive superoxides can be converted by oxidoreductases into more aggressive intermediates which cause extensive cell damage. In normal metabolic cells, these ROS are produced at very low levels and the damage caused is instantly repaired. Intense oxidative stress on the other hand results in ATP depletion, necrosis or controlled apoptotic death. The antioxidant enzymes within the cells like catalase, superoxide dismutase (SOD), lactoperoxidases and glutathione peroxidase inhibit the production of such free radicals and thus protect cells in order to maintain the balance.

Oxidative stress is a hallmark of a number of diseases including Alzheimer's disease, Parkinson's disease, Sickle cell disease, heart failure, myocardial infarction, Schizophrenia, fragile X syndrome, diabetes, cancer, cardiovascular disease and chronic fatigue syndrome. These pathological changes in the cells primarily occur due to DNA damage, oxidation of amino acids, proteins, polyunsaturated fatty acids and enzyme cofactors which subsequently causes cell death due to apoptosis or necrosis.

BioVision has a number of kits, antibodies, proteins and antioxidants in this behalf to help researchers study and understand the detailed mechanisms on this front.

Assay Kits

Name	Cat. #
Aconitase Activity Assay Kit	K716-100
Ascorbic Acid Assay Kit	K661-100
Ascorbic Acid Assay Kit II (FRASC)	K671-100
Catalase Activity Assay Kit	K773-100
DNA Damage Quantification Kit	K253-25
Ethanol Assay Kit	K620-100
Glutamate Assay Kit	K629-100
Glutathione (GSH/GSSG/Total) Assay Kit	K264-100
Glutathione Colorimetric Detection Kit	K261-100
Glutathione Fluorometric Detection Kit	K251-100
Glutathione Peroxidase Activity Assay Kit	K762-100
Glutathione Reductase Activity Assay Kit	K761-100
GST Colorimetric Activity Assay Kit	K263-100
GST Fluorometric Activity Assay Kit	K260-100
HAT Activity Activity Assay Kit	K332-100
HDAC Colorimetric Activity Assay Kit	K331-100
HDAC Fluorometric Activity Assay Kit	K330-100
HDAC Inhibitor Drug Screening Kit	K340-100
Hydrogen Peroxide Assay Kit	K265-100
Lipid Peroxidation (MDA) Assay Kit	K739-100
Myeloperoxidase (MPO) Colorimetric Activity Assay Kit	K744-100
Myeloperoxidase (MPO) Fluorometric Activity Assay Kit	K745-100

Assay Kits Continued...

Name	Cat. #
Nitric Oxide Colorimetric Assay Kit	K262-100
Nitric Oxide Fluorometric Assay Kit	K252-100
SOD Activity Activity Assay Kit	K335-100
Thioredoxin Reductase Activity Assay Kit	K763-100
Total Antioxidant Capacity (TAC) Assay Kit	K274-100
Uric Acid Assay Kit	K608-100
Xanthine Oxidase Activity Assay Kit	K710-100

Antibodies

Name	Cat. #
Catalase Antibody	3806-100
Myeloperoxidase (MPO) Antibody	3831-100
SOD-1 Antibody	3458-100

Antioxidants

Name	Cat. #
(-)-Epigallocatechin gallate	1841-50
Celastrol	1940-5, 25
Curcumin, Curcuma longa (High Purity)	1850-10, 50
Deferoxamine Mesylate	1883-500, 1000
Genistein	1533-10, 100
Genistin	1535-10
IPAM	1817-100, 500, 1000
Naringenin	1772-250, 1000
Piperlongumine	1919-10, 50
Piperlonguminine	1988-10, 50
Quercetin, Dihydrate	1773-250, 1000
Reduced Glutathione (GSH)	1242-1
Resveratrol	1758-100, 500
Rosmarinic Acid	1843-50, 250
Tiliroside	1879-1, 5

GST Inhibitors

Name	Cat. #
GST Inhibitor-1 (Cibacron Blue 3G-A, Sodium Salt)	1555R-1000
GST Inhibitor-2 (Ethacrynic acid)	1556-1000

Proteins

Name	Cat. #
Catalase, Human Erythrocytes	4712-100
Glutathione Sepharose	6555-1, 10, 50
Myeloperoxidase, Human Neutrophil	4744-100
Superoxide Dismutase, human recombinant	4802-100