



P: 1300 688 522
 E: info@nutripath.com.au
 A: PO Box 442 Ashburton VIC 3142

TEST PATIENT

GUa d'Y'HYgh'BUa Y
 Sex : :
 DUHY Collected : 00-00-0000
 111 H9GH'ROAD TEST SUBURB
@AB =8: 00000000 UR#:0000000

TEST PHYSICIAN

DR JOHN DOE
 111 CLINIC STF 99H
 7@-B=7'GI 6I F 6'J =7'' \$\$\$

INTEGRATIVE MEDICINE

Plasma/Serum/Ur

Oxidative Damage Markers Profile

	Result	Range	Units	
Malonydialdehyde (MDA)	72.0 *H	40.0 - 60.0	ug/L	
Carbonyl Proteins	0.7	0.6 - 0.9	ug/L	
Allantoin	124.0	70.0 - 130.0	umol/L	
8 OH-deoxyguanosine	2.6 *H	1.1 - 1.5	nmol/mmol	

(*) Result outside normal reference range

(H) Result is above upper limit of reference rang



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Oxidative Damage Comment

Malondialdehyde (MDA), the end product of lipid peroxidation. This is a test for fat soluble vitamin deficiencies. Increased levels of lipid peroxidation products have been associated with a variety of chronic diseases in humans. MDA reacts readily with amino groups on proteins and other bio-molecules to form a variety of adducts, including cross-linked products. MDA also forms adducts with DNA bases that are mutagenic and possibly carcinogenic.

ELEVATED MDA LEVEL:

Suggestive of the need for supplementation with Vitamin A & E.

Reactive Carbonyl compounds are formed during metal-catalyzed auto-oxidation of carbohydrates and peroxidation of lipids. These compounds are intermediates in the formation of advanced glycation endproducts (AGE) and advanced lipoxidation end products (ALE) in tissue proteins during ageing and in chronic disease. Once formed, AGEs inhibit cellular transport processes, stimulate cells to produce more free radicals (such as superoxide and nitric oxide), and activate pro-inflammatory cytokines such as Tumour Necrosis Factor alpha (TNF-a) and interleukin 6. In addition, some AGEs are immunogenic (causing age-related auto-immunity) or mutagenic (increasing the risk of cancer), whereas others increase the activity of adhesion molecules, reduce protein degradation rate and reduce cell proliferation, all of which ensure that the risk of degenerative disease is increased. Also, AGEs stimulate apoptosis, resulting in excessive loss of cells and contributing further to the risk of degeneration. Some AGEs up-regulate genes which are involved in chronic inflammation reactions.

At the clinical level, cross-linking contributes significantly to diabetic complications, lower immunity and increased risk of cancer, atherosclerosis and hypertension, Alzheimer's disease (through the formation of amyloid, which is a type of AGE), cataract, kidney damage, skin ageing, and other age-related diseases.

Allantoin is a urinary excretion product of purine metabolism in most mammals. It is the oxydative waste of the muscle and other visceral tissue. It is produced synthetically by the oxidation of uric acid. Allantoin is a non-enzymatic oxidative product of uric acid in human and known to cause free radical damage.

ELEVATED 8-OHdG LEVEL:

Consistent with excess free radical damage of genes.

There are a number of DNA damage products that are formed, the one most readily measured is 8-Hydroxy-2'-deoxyguanosine (8-OHdG). As DNA oxidative damage occurs, repair mechanisms remove this product as the marker, 8-OHdG, which is excreted unchanged in the urine. These levels are used as a non-invasive marker of DNA damage or oxidative stress.

In normal circumstances, DNA damage is always occurring, however is minimised by the cell's protective systems including a range of antioxidant species as well as cellular repair enzymes. However under certain conditions, the delicate balance between pro-oxidant species and protective mechanisms can be upset, resulting in oxidative stress.

Supplementation Recommendations:

Higher levels of water soluble and fat soluble anti-oxidants are indicated. Suggest supplementing with alpha lipoic acid and glutathione.

8-OHdG is an index of genetic material oxidative damage. This is a major contributor to the ageing process and related degenerative diseases.

Smokers excrete 50% more 8-OHdG than non-smokers.



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