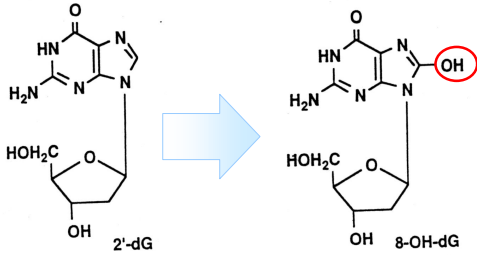


Oxidative Stress Markers

CAT20080222E

① 8-OHdG ELISA kit (8-hydroxy-2'-deoxyguanosine)



Formation of 8-hydroxy-2'-deoxyguanosine (8-OHdG) by oxygen radicals.
H Kasai: Environmental Mutagen Research, Vol. 10, p73-78 (1988)

Oxidative stress is known to play an important role in the development of various diseases and aging process. 8-hydroxy-2'-deoxyguanosine (8-OHdG) is formed when DNA is oxidatively damaged by reactive oxygen species (ROS). 8-OHdG is one of the most sensitive biomarker for oxidative stress and can be detected in urine, serum, tissue DNA from human and animals.

① High specificity & high sensitivity:

Cross reactivity was checked for 19 analogues.

② Easy operation & speedy:

There is no need for expensive equipment and sample pretreatment. Required equipments are: pipettes, incubator and micro plate reader with 450nm filter. Assays can be completed within 3.5 hours (New 8-OHdG Check).



New 8-OHdG Check ELISA (96wells) code: KOG-200SE

(Measuring range: 0.5 to 200 ng/mL, suitable for urine sample.)

New 8-OHdG Check Trial Package (32wells) code: KOG-200TE

(Measuring range: 0.5 - 200 ng/mL, suitable for urine sample.)

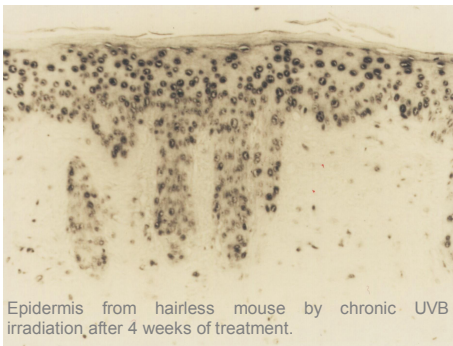
Highly Sensitive 8-OHdG Check ELISA (96 wells) code: KOG-HS10E

(Measuring range: 0.125 to 10 ng/mL, suitable for serum* and tissue DNA.*)

*: sample pretreatment is required.

Reference: S Saito, et.al.: Res. Commun. Mol. Pathol. Pharmacol. 107(1&2), p39-44 (2000)

② Anti 8-OHdG monoclonal antibody (clone N45.1)



Epidermis from hairless mouse by chronic UVB irradiation after 4 weeks of treatment.

Highly specific for 8-OHdG.

Anti 8-OHdG mouse monoclonal antibody (IgG1 κ), lyophilized powder.

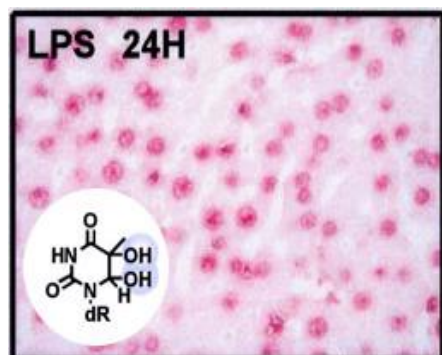
Cross reactivity was checked for 19 analogues. dA, dC, dT, 2'-dG, 8-OHdA, 2'-di, 2'-dU, O6-methyl-dG, G, 7-methyl-G, 8-Br-G, 8-sulfhydryl-G, 4-SH-G, 8-OH-G, Gua, O6-methyl-Gua, 8-OH-Gua, uric acid, urea, creatinine, creatine (G: Guanosine, Gua: Guanine)

Anti 8-OHdG monoclonal antibody (20 micro gram) code: MOG-020P

Anti 8-OHdG monoclonal antibody (100 micro gram) code: MOG-100P

Reference: S Toyokuni, et. al.: Lab. Invest. 76(3), p365-374 (1997)

③ Anti Thymidine Glycol (TG) monoclonal antibody



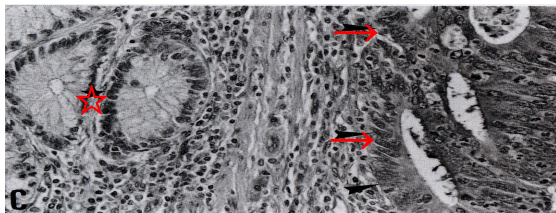
NEW!

Biomarker for oxidative DNA damage.

Thymidine glycol (TG) is produced when thymidine is damaged by hydroxy radical, and is a sensitive biomarker for oxidative stress. Anti TG monoclonal antibody specific for TG in DNA polymers. Suitable for immunohistochemical research.

Anti TG monoclonal antibody (100 micro gram) code: MTG-100P

4 Anti 4-HNE monoclonal antibody (HNE-J2)



Immunohistochemistry of colorectal carcinoma cells. Adenocarcinoma (arrows→) and nontumorous epithelial cells (star☆; × 240). (S. Kondo et al. Free Radical Biology & Medicine 27 pp401-410, 1999)

Highly specific for 4-HNE.

Membrane lipids are one of the targets of reactive oxygen species (ROS). 4-hydroxy-2-nonenal (4-HNE) is a major membrane lipid peroxidation product. Monoclonal antibody against 4-HNE (clone HNE-J2) is highly specific for 4-HNE-His/Lys/Cys adducts.

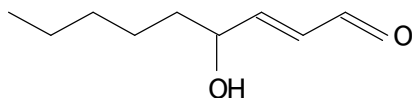
Anti 4-HNE mouse monoclonal antibody (IgG1 κ), lyophilized powder.

For immunohistochemistry and western blotting.

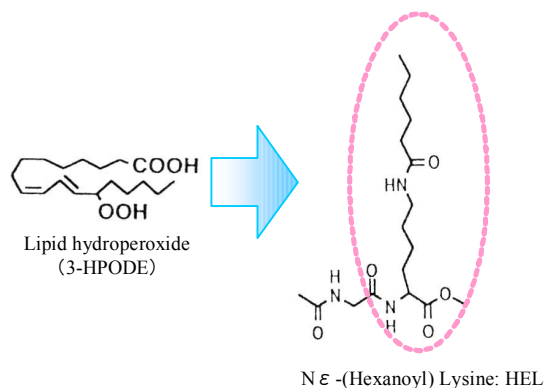
Anti 4-HNE monoclonal antibody (20 micro gram) code: MHN-020P

Anti 4-HNE monoclonal antibody (100 micro gram) code: MHN-100P

Reference: S Toyokuni, et. al.: FEBS Lett. 359, p189-191 (1995)



5 Hexanoyl-Lysine adduct (HEL) ELISA kit & antibody



A new biomarker of lipid peroxidation.

Hexanoyl-Lysine adduct (HEL) is a novel lipid hydroperoxide-modified lysine residues. HEL is formed by oxidative modification by oxidized ω-6 fatty acids such as linoleic acid or arachidonic acid. HEL may be a useful biomarker for initial stage of lipid peroxidation, and is detected in oxidatively modified LDL, in human atherosclerotic lesions and human urine.

ELISA kit suitable for urine and serum samples.

Hexanoyl-Lys adduct (HEL) ELISA (96wells) code: KHL-700E

(Measuring range: 2 to 700 nmol/L)

Suitable for human urine and animal serum. Required equipments are: pipettes, incubator and microplate reader with 450nm filter.

For immunohistochemistry and western blotting.

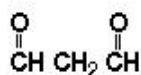
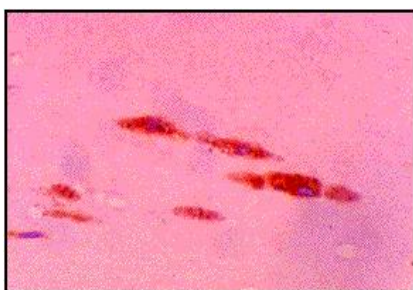
Anti HEL monoclonal antibody (20 micro gram) code: MHL-020P

Anti HEL mouse monoclonal antibody (IgG, clone 5H4), lyophilized powder. Cross reactivity was checked for 8 analogues: MDA, glyoxal, methyl glyoxal, 1-hexanal, 2-hexenal, 1-nonanal, 2-nonenal and 4-hydroxy-2-nonenal.

Reference: Y Kato, et.al.: Biochem. Biophys. Res. Commun. 274, p389-393 (2000)



6 Anti MDA monoclonal antibody (1F83)



Malondialdehyde

Highly specific for Malondialdehyde (MDA).

Malondialdehyde (MDA) is one of the major aldehyde derived from lipid peroxidation. This antibody is specific for MDA-modified proteins, and suitable for immunohistochemistry and western blotting.

For immunohistochemistry and western blotting.

Anti MDA monoclonal antibody (30 micro gram) code: MMD-030n

7 Test kit for Total Antioxidant Capacity (PAO)

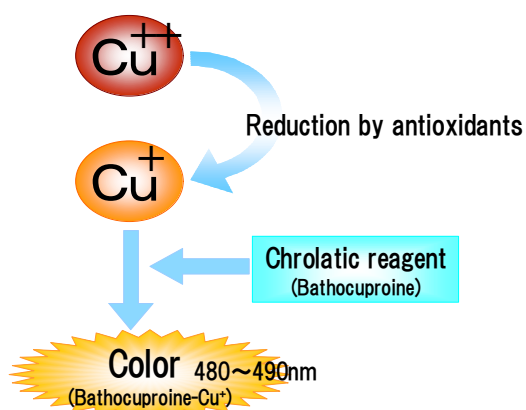


Significance of antioxidants.

For accurate assessment of oxidative stress, measurement of ROS, oxidative damage and antioxidant activity may be essential. Recently, antioxidants as functional foods which scavenge ROS attract a great deal of attention. In the PAO assay kit, an easy and convenient method to measure antioxidant capacity is provided. Utilizing the reduction of cupric ion ($\text{Cu}^{++} \rightarrow \text{Cu}^+$), antioxidant capacity of samples can be detected in 5 minutes.

Application to foods, beverages and serum.

PAO can detect not only hydrophilic antioxidants such as Vitamin C, glutathione, but also can detect hydrophobic antioxidants such as Vitamin E. Applicable for assessment of total antioxidants of serum, foods and beverage samples.



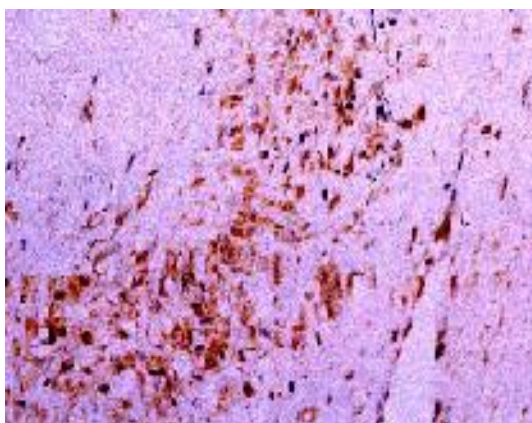
| Samples | | Sample pretreatment | | Samples required | Assay example |
|-----------------------------------|-----------|--|---------------------------------------|------------------|---------------------------------------|
| | | Pre-dilution | Assay dilution | | |
| Human serum or heparinized plasma | | - | Mix with 39 volumes of Sample Diluent | 10 μL | Mean 1069 \pm 145 $\mu\text{mol/L}$ |
| Human urine | | Mix with 3 volumes of distilled water. | | 2 μL | 5508 $\mu\text{mol/L}$ |
| Foods | Red wine | Mix with 3 volumes of distilled water. | | 2 μL | 45479 $\mu\text{mol/L}$ |
| | Green tea | Mix with 7 volumes of distilled water. | | 2 μL | 8728 to 46687 $\mu\text{mol/L}$ |
| | Black tea | Mix with 7 volumes of distilled water. | 2 μL | | |
| | Coffee | Mix with 7 volumes of distilled water. | 1 μL | | |

Potential Antioxidant kit (PAO) (96wells) code: KPA-050E

Suitable for human and animal serum. Required equipments are: pipettes, and microplate reader with 492nm filter.

Reference: C. VASSALLE, et. al. Journal of Internal Medicine 2004; 256: 308-315

8 Acrolein (ACR) Antibody



Biomarker of lipid peroxidation.

Acrolein (ACR) is a representative carcinogenic aldehyde found ubiquitously in the environment and endogenously through oxidation reactions, such as lipid peroxidation and myeloperoxidase-catalyzed amino acid oxidation. ACR is highly reactive aldehyde and reacts with lysine residue in protein.

For immunohistochemistry and western blotting.

Anti ACR mouse monoclonal antibody (IgG, clone 5F6).

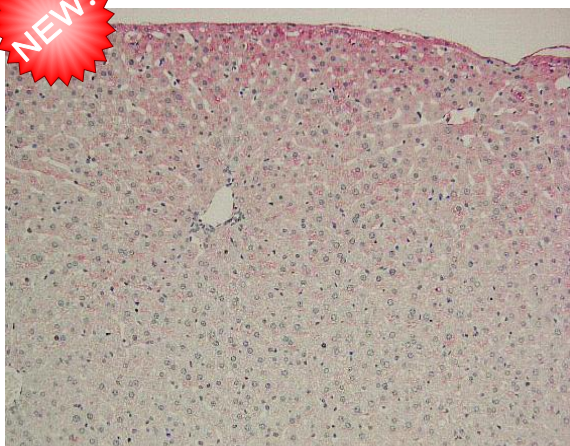
Cross reactivity was checked for 14 analogues: crotonal, 2-hexenal, 2-octanal, 2-nonenal, 4-decanal, 2,4-decadienal, MDA, 4-HHE, 4-HPE, 4-HON, 4-HNE, n-propanal, n-pentanal and n-hexenal.

Anti ACR monoclonal antibody (20 micro gram) code: MAR-020n

Anti ACR monoclonal antibody (100 micro gram) code: MAR-100n

Reference: K.Satoh, et. al. Analytical Biochemistry.270,323-328(1999)

9 Anti Dibromo Tyrosine monoclonal antibody (3A5)



A new biomarker of protein oxidation caused by neutrophils.

Neutrophils and eosinophils play an important role in the defence system against microbial infection. Myeloperoxidase and eosinophil peroxidase are known to catalyze formation of hypochlorous acid (HOCl) and hypobromous acid (HOBr). These reactive intermediates react with proteins, and are known to form tyrosine halogenation such as dibromotyrosine (DiBrY).

This monoclonal antibody is specific for 3,5-DiBrY, and suitable for immunohistochemical analysis of oxidative stress.

Anti DiBrY monoclonal antibody (20 micro gram) code: MBY-020P

Reference: Y Kato, et. al. Rad Biol Med, 38, p24-31 (2005)

10 Other antibodies for Lipid peroxidation markers

Anti 4-HHE monoclonal antibody

(4-hydroxy-2-hexenal)

4-hydroxy-2-alkenal is one of the major lipid peroxidation products, and shows many biological effects such as high toxicity to cells. Among them, 4-hydroxy-2-hexenal (4-HHE) is an aldehyde formed during peroxidation of n-3 fatty acids such as docosahexaenoic acid.

**Anti 4-HHE monoclonal antibody (30 micro gram)
code: MHH-030n**

Anti MG monoclonal antibody

(Methylglyoxal)

Methylglyoxal (MG), an endogenous metabolite that increases in diabetes and is a common intermediate in the Maillard reaction (glycation), reacts with proteins and forms advanced glycation end products (AGE).

**Anti MG monoclonal antibody (30 micro gram)
code: MMG-030n**

Anti 7-KC monoclonal antibody

(7-ketocholesterol)

Cholesterol oxidation products, especially 7-ketocholesterol (7-KC) have been the focus of much attention because they are present in human atherosclerotic plaque and display a wide range of atherogenic properties in vitro and in vivo.

**Anti 7-KC monoclonal antibody (20 micro gram)
code: MKC-020n**

Anti CRA monoclonal antibody

(Crotonaldehyde)

Crotonaldehyde (CRA) is a representative carcinogenic aldehyde formed endogenously through lipid peroxidation. CRA is a highly reactive aldehyde and reacts with lysine residue in proteins.

**Anti CRA monoclonal antibody (30 micro gram)
code: MCA-030n**

Developed by & Technical support:



**Japan Institute for the Control of Aging (JalCA),
Nikken SEIL Co., Ltd.**

Established in 1985. A satellite center of Trace Element Institute for UNESCO.

Haruoka 710-1, Fukuroi, Shizuoka, 437-0122 Japan
biotech@jaica.com Phone: +81-538-49-0125 FAX: +81-538-49-1267
<http://www.jaica.com/>