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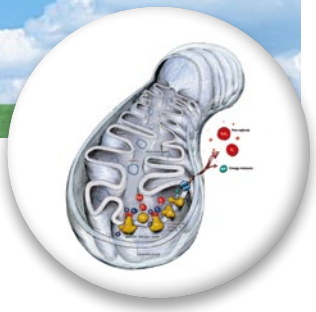
Unique Oxidative Stress Markers



The Japan Institute for the Control of Aging (JaICA) develops and manufactures research reagents to detect oxidative stress markers for DNA oxidation, Lipid oxidation, Protein oxidation and antioxidants. The monoclonal antibodies and ELISA kits detect products of oxidative damage caused by reactive oxygen species. They are worldwide known in the research community and cited in many scientific publications.

The interest in preventive medicine, anti-aging and functional food has increased in recent years. Today, hospitals, universities, research institutes, food manufacturers and pharmaceutical industries all over the world are in the process to analyze oxidative stress markers, aging-related hormones and minerals.

Oxidative Stress Markers Overview

Oxidative Stress Markers

	Product Name	Prod. No.	Sample Application: Urine	Serum	Tissue
DNA Oxidation	**8-OHdG Check ELISA Kit**	JAI-KOG-200TE JAI-KOG-200SE	Yes	Yes (animals)	–
	8-OHdG Check ELISA Kit (High Sensitivity)	JAI-KOG-HS10E	Yes	Yes (animals)	Yes
	anti-8-OHdG, mAb (N45.1)	JAI-MOG-020P JAI-MOG-100P	–	–	Yes
	anti-Thymidine Glycol [TG], mAb (2E8)	JAI-MTG-100P	–	–	Yes
Lipid Oxidation	**Hexanoyl-Lys [HEL] ELISA Kit**	JAI-KHL-700E	Yes	Yes	Yes
	anti-Hexanoyl-Lys [HEL], mAb (5F12)	JAI-MHL-021P	–	–	Yes
	anti-Hydroxy-2-nonenal [4-HNE], mAb (HNEJ-2)	JAI-MHN-020P JAI-MHN-100P	–	–	Yes
	anti-Acrolein [ACR], mAb (5F6)	JAI-MAR-020N JAI-MAR-100N	–	–	Yes
	anti-Malondialdehyde [MDA], mAb (1F83)	JAI-MMD-030N	–	–	Yes
	anti-4-Hydroxy-2-hexenal [4-HHE], mAb (HHE53)	JAI-MHH-030N	–	–	Yes
	anti-Crotonaldehyde [CRA], mAb (82D3)	JAI-MCA-030N	–	–	Yes
	anti-Methylglyoxal [MG], mAb (3C)	JAI-MMG-030N	–	–	Yes
	anti-7-Ketocholesterol [7-KC], mAb (35A)	JAI-MKC-020N JAI-MKC-100N	–	–	Yes
Protein Oxidation	**Dityrosine [DT] ELISA Kit**	JAI-KDT-010E	Yes	–	–
	anti-Dityrosine [DT], mAb (1C3)	JAI-MDT-020P	–	–	Yes
	anti-Dibromo-tyrosine [DiBrY], mAb (3A5)	JAI-MBY-020P	–	–	Yes
Antioxidant Assay	**Total Antioxidant Capacity [PAO] Test Kit**	JAI-KPA-050	–	Yes	Food Samples

Oxidative DNA Damage Markers

8-Hydroxy-2'-deoxyguanosine (8-OHdG)

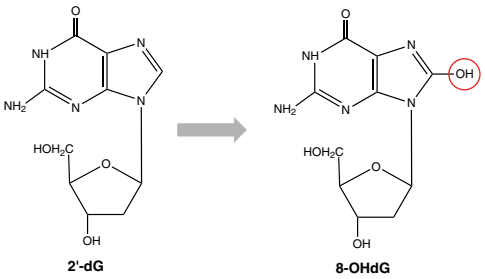
8-Hydroxy-2'-deoxyguanosine (8-OHdG) is formed when DNA is oxidatively damaged by reactive oxygen species (ROS). 8-OHdG is one of the most sensitive biomarker for oxidative stress and can be detected in urine, serum, tissue DNA from human and animals.

8-OHdG Check ELISA Kit

JAI-KOG-200TE	Trial	32 wells
JAI-KOG-200SE		96 wells

SPECIFICITY:	8-OHdG
RANGE:	0.5 to 200 ng/ml
ASSAY TYPE:	Competitive
SAMPLE TYPE:	Urine

Formation of 8-OHdG by oxygen radicals



8-OHdG Check ELISA Kit (High Sensitivity)

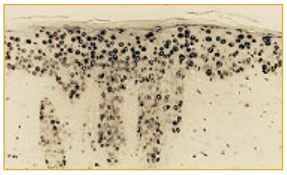
JAI-KOG-HS10E	96 wells

SPECIFICITY:	8-OHdG
RANGE:	0.125 to 10 ng/ml
ASSAY TYPE:	Competitive
SAMPLE TYPE:	Plasma, Serum, Urine, DNA extracted from cultured cells or tissues

anti-8-OHdG, mAb (N45.1)

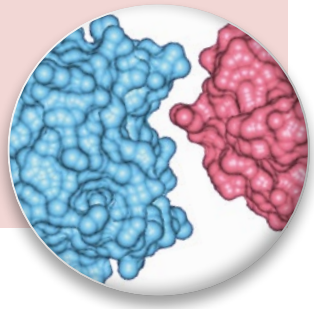
JAI-MOG-020P	20 µg
JAI-MOG-100P	100 µg

APPLICATION:	IHC, ELISA
SPECIFICITY:	Recognizes 8-OHdG.



Protein Oxidation Markers

Dityrosine

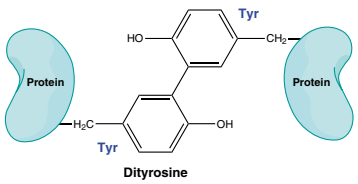


Tyrosine is one of the major targets of protein oxidation. Dityrosine (DT) is known to be formed when tyrosine is damaged by free radicals, such as reactive oxygen species (ROS), metal-catalyzed oxidation, ultraviolet irradiation and peroxidases. Dityrosine is a specific biomarker for protein oxidation and can be detected non-invasively in urine samples.

Dityrosine [DT] ELISA Kit

JAI-KDT-010E	96 wells

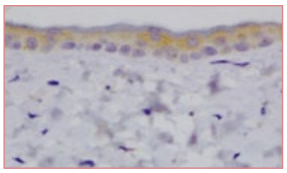
SPECIFICITY:	Dityrosine (tyrosine dimer)
RANGE:	0.05 to 12 µmol/L
ASSAY TYPE:	Competitive
SAMPLE TYPE:	Urine



anti-Dityrosine [DT], mAb (1C3)

JAI-MDT-020P	20 µg

APPLICATION:	ELISA, IHC, WB
SPECIFICITY:	Recognizes free dityrosine, 3-(p-hydroxyphenyl) propionic acid dimer, dityrosine-BSA conjugate and dityrosine in protein or peptides.



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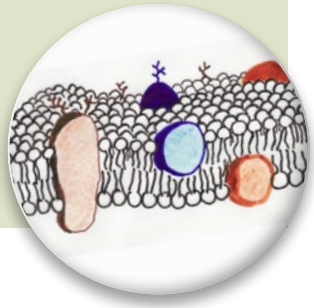
Hexanoyl-lysine (HEL)

The Hexanoyl-lysine (HEL) adduct is formed upon oxidative modification of ω-6 fatty acids such as linoleic acid, the predominant polyunsaturated fatty acid (PUFA) in the human diet and arachidonic acid. HEL is a useful biomarker for detecting and quantifying the earlier stages of lipid peroxidation.



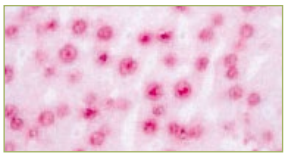
Hexanoyl-Lys [HEL] ELISA Kit

JAI-KHL-700E 96 wells

SPECIFICITY:	N-ε-Hexanoyl-lysine adduct
RANGE:	2 to 700 nmol/L
ASSAY TYPE:	Competitive
SAMPLE TYPE:	Serum, Urine, DNA extracted from cultured cells or tissues

anti-Hexanoyl-Lys [HEL], mAb (5F12)

JAI-MHL-021P 20 µg



APPLICATION:	ELISA, IHC, WB
SPECIFICITY:	Recognizes Hexanoyl-Lys adducts.

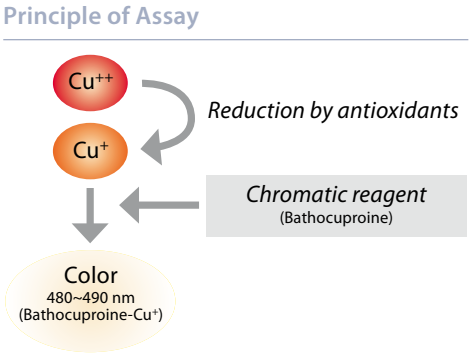
Antioxidants

Oxidative stress is caused by the imbalance between reactive oxygen species (ROS) and the antioxidant defense system. For accurate assessment of oxidative stress, measurement of ROS, oxidative damage and antioxidant activity may be essential. Recently, antioxidants have attracted a lot of attention for the development of functional food which scavenges ROS.

Principle of Assay

The PAO assay kit is an easy and convenient method to measure antioxidant capacity. Utilizing the reduction of the cupric ion (Cu^{++} to Cu^{+}), antioxidant capacity of samples can be detected in 5 minutes.

1. Samples are mixed with Cu^{++} Solution.
2. Cu^{++} are reduced by antioxidants to form Cu^{+}.
3. Reduced Cu^{+} reacts with Chromatic Solution (Bathocuproine) and can be detected by absorbance at wavelength 480 to 490 nm.
4. Antioxidant capacity can be calculated from the formed Cu^{+}.



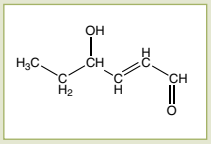
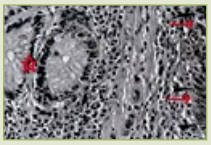
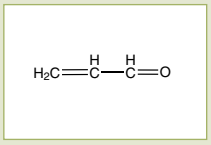
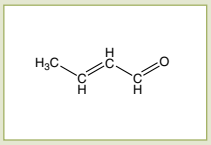
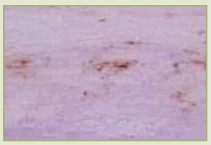
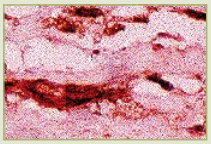
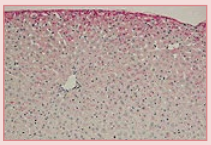
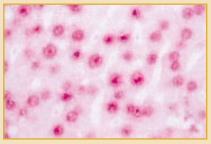
Total Antioxidant Capacity (PAO) Test Kit

JAI-KPA-050 96 wells

RANGE:	21.9 to 4378 µmol/L (cupric ion reducing power)
SPECIFICITY:	This assay detects hydrophilic antioxidants such as Vitamin C, glutathione and also hydrophobic antioxidants such as Vitamin E.
SAMPLE TYPE:	Human and animal serum samples, food and beverage samples.

Specific Oxidative Stress Marker Antibodies

Specific Oxidative Stress Marker Antibodies

	Product Name	Prod. No.	Size	Application	
Lipid Perioxidation Marker	**anti-4-Hydroxy-2-hexenal [4-HHE], mAb (HHE53)**	JAI-MHH-030N	30 µg	IHC	
	anti-4-Hydroxy-2-nonenal [4-HNE], mAb (HNEJ-2)	JAI-MHN-020P JAI-MHN-100P	20 µg 100 µg	IHC, WB	
	anti-Acrolein [ACR], mAb (5F6)	JAI-MAR-020N JAI-MAR-100N	20 µg 100 µg	IHC	
	anti-Crotonaldehyde [CRA], mAb (82D3)	JAI-MCA-030N	30 µg	IHC	
	anti-7-Ketocholesterol [7-KC], mAb (35A)	JAI-MKC-020N JAI-MKC-100N	20 µg 100 µg	IHC	
	anti-Malondialdehyde [MDA], mAb (1F83)	JAI-MMD-030N	30 µg	IHC	
	anti-Methylglyoxal [MG], mAb (3C)	JAI-MMG-030N	30 µg	IHC	
Protein Oxidation Marker	**anti-Dibromo-tyrosine [DiBrY], mAb (3A5)**	JAI-MBY-020P	20 µg	ELISA, IHC, WB	
DNA Oxidation Makrer	**anti-Thymidine Glycol [TG], mAb (2E8)**	JAI-MTG-100P	100 µg	IHC	

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