



# JaICA

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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

|                   | Product Name                                  | Prod. No.                      | Sample Application |               |              |
|-------------------|---|--------------------------------|--------------------|---------------|--------------|
|                   |   |                                | Urine              | Serum         | Tissue       |
| DNA Oxidation     | 8-OHdG Check ELISA Kit                        | JAI-KOG-200TE<br>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<br>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<br>JAI-MHN-100P   | –                  | –             | Yes          |
|                   | anti-Acrolein [ACR], mAb (5F6)                | JAI-MAR-020N<br>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<br>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          |
| Protein Nitration | anti-Nitrotryptophan [NW], mAb (117C)         | JAI-MNW-020P                   | –                  | –             | Yes          |
| Antioxidant Assay | Total Antioxidant Capacity [PAO] Test Kit     | JAI-KPA-050                    | –                  | Yes           | Food Samples |

## 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

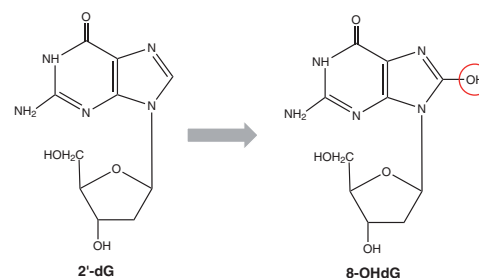
SPECIFICITY: 8-OHdG  
RANGE: 0.5 to 200 ng/ml  
ASSAY TYPE: Competitive  
SAMPLE TYPE: Urine

### 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

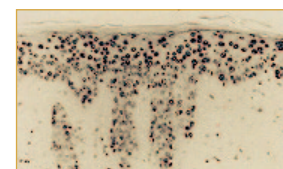
### Formation of 8-OHdG by oxygen radicals



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

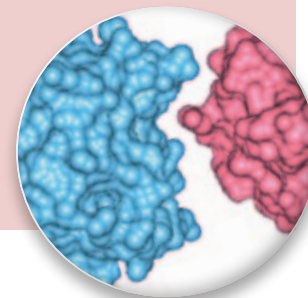
JAI-MOG-020P 20 µg  
JAI-MOG-100P 100 µg

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



## Dityrosine

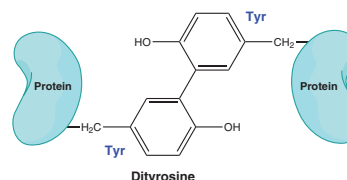
Tyrosine is one of the major targets of protein oxidation. Dityrosine (DT) is known to be formed when tyrosine is damaged by free radicals, such as reactive oxygen species (ROS), metal-catalyzed oxidation, ultraviolet irradiation and peroxidases. Dityrosine is a specific biomarker for protein oxidation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



### Dityrosine [DT] ELISA Kit

JAI-KDT-010E 96 wells

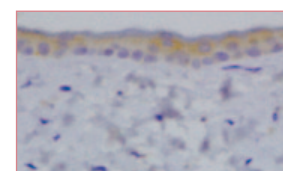
SPECIFICITY: Dityrosine (tyrosine dimer)  
RANGE: 0.05 to 12 µmol/L  
ASSAY TYPE: Competitive  
SAMPLE TYPE: Urine



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

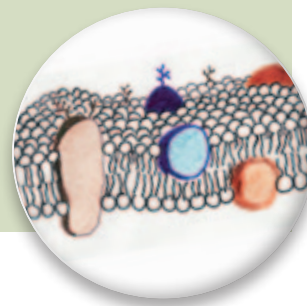
JAI-MDT-020P 20 µg

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



## Hexanoyl-lysine (HEL)

The Hexanoyl-lysine (HEL) adduct is formed upon oxidative modification of  $\omega$ -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- $\epsilon$ -Hexanoyl-lysine adduct

**RANGE:** 2 to 700 nmol/L

**ASSAY TYPE:** Competitive

**SAMPLE TYPE:** Serum, Urine, DNA extracted from cultured cells or tissues

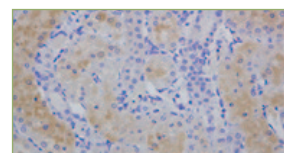
### anti-Hexanoyl-Lys [HEL], mAb (5F12)

JAI-MHL-021P

20  $\mu$ g

**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.



### Total Antioxidant Capacity (PAO) Test Kit

JAI-KPA-050

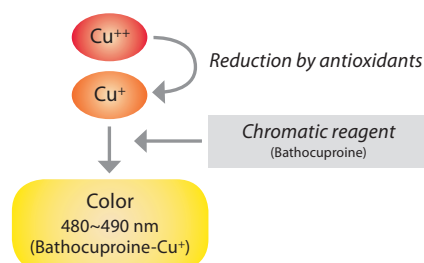
96 wells

**RANGE:** 21.9 to 4378  $\mu$ mol/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.

#### Principle of Assay

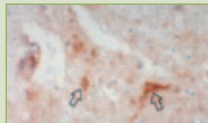
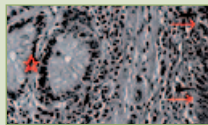

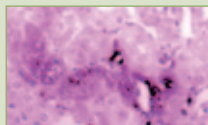


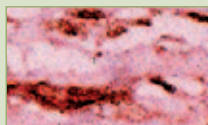

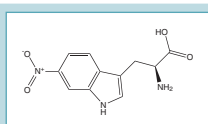



## New Trace Element Kits

|   |             |           |
|---|-------------|-----------|
| Calcium Colorimetric Assay Kit (Chlorophosphonazo-III Method) | JAI-CCA-020 | 200 tests |
| Calcium Colorimetric Assay Kit (O-Cresolphthalein Method)     | JAI-CCA-030 | 200 tests |
| Copper Colorimetric Assay Kit (3,5-DiBr-PAESA Method)         | JAI-CCU-400 | 100 tests |
| Iron Colorimetric Assay Kit (Ferrozine Method)                | JAI-CFE-005 | 100 tests |
| Iron Colorimetric Assay Kit (Nitroso-PSAP Method)             | JAI-CFE-010 | 100 tests |
| Magnesium Colorimetric Assay Kit (Xylidyl Blue-I Method)      | JAI-CMG-035 | 100 tests |
| Zinc Colorimetric Assay Kit (5-Br-PAPS Method)                | JAI-CZN-001 | 100 tests |

# Specific Oxidative Stress Marker Antibodies

## Specific Oxidative Stress Marker Antibodies

|                           | Product Name                                   | Prod. No.                    | Size            | Application    |   |
|---------------------------|--|------------------------------|-----------------|----------------|---|
| Lipid Peroxidation 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<br>JAI-MHN-100P | 20 µg<br>100 µg | IHC, WB        |    |
|                           | anti-Acrolein [ACR], mAb (5F6)                 | JAI-MAR-020N<br>JAI-MAR-100N | 20 µg<br>100 µg | IHC            |    |
|                           | anti-Crotonaldehyde [CRA], mAb (82D3)          | JAI-MCA-030N                 | 30 µg           | IHC            |    |
|                           | anti-7-Ketocholesterol [7-KC], mAb (35A)       | JAI-MKC-020N<br>JAI-MKC-100N | 20 µg<br>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 |  |
| Protein Nitration Marker  | anti-Nitrotryptophan [NW], mAb (117C)          | JAI-MNW-020P                 | 20 µg           | ELISA, IHC, WB |  |
| DNA Oxidation Marker      | anti-Thymidine Glycol [TG], mAb (2E8)          | JAI-MTG-100P                 | 100 µg          | IHC            |  |



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