

“New 8-OHdG Check” INSTRUCTIONS

The 8-OHdG Check is a competitive *in vitro* enzyme-linked immunosorbent assay (ELISA) for quantitative detection of the oxidative DNA adduct 8-hydroxy-2'-deoxyguanosine (8-OHdG). Suitable for urine, serum, plasma, tissue and other biological samples. For research use only. Not for diagnostic or medical use. Read entire insert before use.

1. Kit Contents


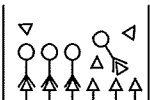
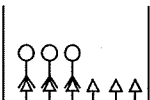
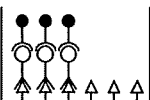

① 8-OHdG Microtiter Plate	: Precoated with 8-OHdG (8 × 12 wells, split type)	1 plate
② Primary Antibody	: Anti 8-OHdG Monoclonal antibody (clone N45.1)	1 vial
③ Primary Antibody Solution	: Phosphate buffered saline	1 vial (6mL)
④ Secondary Antibody	: HRP-conjugated anti mouse antibody	1 vial
⑤ Secondary Antibody Solution	: Phosphate buffered saline	1 vial (12mL)
⑥ Chromatic Solution	: 3,3',5,5'-tetramethylbenzidine	1 vial (0.25mL)
⑦ Diluting Solution	: Hydrogen peroxide/citrate-phosphate buffered saline	1 vial (12mL)
⑧ Washing Solution (5x)	: 5 times concentrated phosphate buffered saline	2 vials (26mL x 2)
⑨ Reaction Terminating Solution	: 1M Phosphoric acid	1 vial (12mL)
⑩ Standard 8-OHdG Solution	: Purified 8-OHdG (0.5, 2, 8, 20, 80, 200 ng/mL)	1 vial each
⑪ Plate Seal		2 sheets

All reagent should be stored at 2-8°C. The expiry date is 12 months after manufacture. After the seal of above contents are opened, this kit should be used within 2 weeks.

2. Additional Materials and Equipments Required

- ① Distilled water.
- ② 50µL micropipettor and pipette tips
- ③ 8-channel micropipettor (50~200µL) and pipette tips
- ④ Reagent trays for 8-channel micropipettor
- ⑤ A 37°C incubator
- ⑥ Microtiter plate reader (measuring wavelength = 450 nm)

3. Principles of the Procedure

- ① The anti-8-OHdG monoclonal antibody and the sample or standard are added to the microtiter plate which has been precoated with 8-OHdG. The 8-OHdG monoclonal antibody reacts competitively with the 8-OHdG bound on the plate and the 8-OHdG in samples solution. Therefore higher concentrations of 8-OHdG in the sample solution lead to a reduced binding of the antibody to the 8-OHdG on the plate.
 
- ② The antibodies which are bound to the 8-OHdG in the sample are washed away from the antibodies that have bound to the 8-OHdG coated on the plate.
 
- ③ An enzyme-labeled secondary antibody, which is added to the plate, binds to the monoclonal antibody which is bound to the 8-OHdG coated on the plate.
 
- ④ Unbound HRP-conjugated secondary antibody is removed by washing.
 
- ⑤ Addition of the substrate solution results in the development of color in proportion to the amount of anti 8-OHdG antibody bound to the plate.
 
- ⑥ The reaction is terminated by phosphoric acid, and absorbance at 450 nm is measured.

4. Assay Procedure

Bring all reagents and samples to room temperature (20-25°C) before use.

- A) Reconstitute the ②Primary Antibody with the ③Primary Antibody Solution.
- B) Add 50μL of sample or ⑩Standard per well, as shown in plate diagram.
- C) Add 50μL of reconstituted primary antibody per well. Shake the plate from side to side and mix fully.
Cover plate with adhesive strip, making sure it is sealed tightly. Incubate at 37°C for 1 hour.
- D) Mix 1 volume of ⑧Washing solution(5x) with 4 volumes of distilled water.
- E) Pour off contents of wells into sink. Pipette 250μL washing solution into each well. After washing thoroughly by shaking the plate from side to side, dispose of washing solution. Invert plate and blot against clean paper towel to remove any remaining washing buffer. Repeat wash two times more.
The use of washing machines or aspirators is not recommended.
- F) Reconstitute the ④Secondary Antibody with the ⑤Secondary Antibody Solution.
- G) Add 100μL of constituted secondary antibody per well. Shake the plate from side to side and mix fully.
Cover the plate with an adhesive strip. Incubate 37°C for 1 hour.
- H) At the end of the incubation period, repeat washing as in step E.
- I) Prepare substrate solution. Add 1 volume of ⑥Chromatic Solution to 100 volumes of ⑦Diluting Solution just before use. Add 100μL of substrate solution per well. Shake the plate from side to side and mix fully.
Incubate at room temperature for 15 minutes in the dark.
- J) Add 100μL of the ⑨Reaction Terminating Solution. Shake the plate from side to side and mix fully.
- K) Measure the absorbance at 450 nm using microtiter plate reader.
Use a standard curve to determine the amount of 8-OHdG present in test samples. Generate the standard curve by plotting absorbance vs. log (concentration of standards). Then use the absorbance values obtained for the test samples to determine the concentrations.

Notices

1) Sample Pretreatment

To assay properly, please pre-treat samples as follows. Avoid repeated freeze and thaw.

- ① Urine : If it's clear, pretreatment is not needed.
Centrifugation at 2,000 ~ 5,000g for 10 ~ 15 minutes is recommended for opaque samples only.
- ② Serum : Blood samples must be separated to serum immediately. To separate interfering substances, filtration of serum using an ultra filter (cut off molecular weight 10,000) is necessary. Pre-treat ultra filter following to the maker's manuals. In order to reduce deviation, diluting samples by more than twice, while paying attention to concentration range is suggested.
- ③ DNA in Tissue : It's necessary to extract and digest DNA in the samples beforehand.

2) Measurement

① Strict Control of Incubation Temperature

Measured values may be very much affected with the incubation temperatures, particularly during primary antibody reaction period. Please pay attention to followings;

- a. Try to keep uniform temperature inside a plate constantly.
- b. It's recommendable to use water bath rather than dry incubators for the incubation.

② Adjustment of pH for samples

It is necessary to maintain pH of a sample mixed with primary solution between 6.0 to 8.0. It's recommendable for abnormal urine samples to be diluted with PBS by three times.

③ Thoroughly Washing of Micro plates

It's recommendable to throw the micro plate down on clean paper towel to remove solution in side wells, after a plate is turn over and solution in side wells is discarded.

④ Cleaning of Instruments and Vessels

Instruments and vessels (such as tips, trays for 8 channel pipettor) to be used, must be clean. If such tools are used repeatedly, please boil or steep them into alkaline cleanser, then wash thoroughly and dry them before use.

3) Split Usage

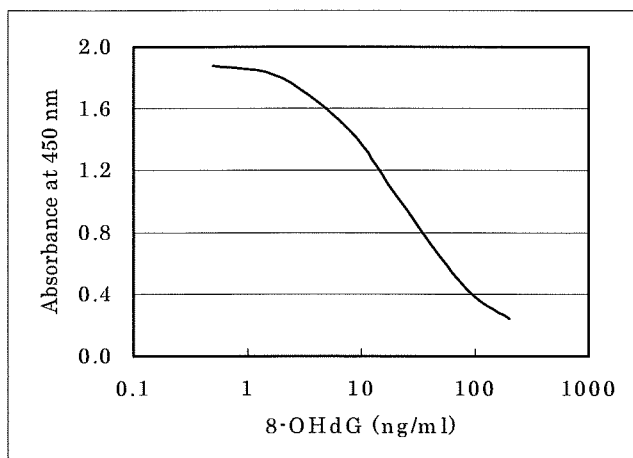
- ① Remained parts of kit (plate and reagents) must be kept in a refrigerator and must be used within two weeks after opened.
- ② Plates and reagents except chromatic solution are taken out from refrigerator and are kept in room temperature beforehand. Necessary volume of Chromatic solution may be added to adequate volume only of Diluting solution just before the reaction. Keep it in the dark.

4) Use of wells

- ① To avoid edge effects, the use of outer most wells is not recommended. To maintain the uniform temperature within the wells, please fill same volume of solutions or water to the unused wells.
- ② Blank wells : at the operation of step C, those wells which are not added the reconstituted primary antibody, will serve as blank wells.
- ③ The figure below shows a typical layout for sample loading in triplicates for each sample. Wells indicated with a cross-mark (×) in A and H lines are not used. With this layout, a maximum of 18 samples can be assayed in a plate.

	1	2	3	4	5	6	7	8	9	10	11	12
A	Blank (×3)			×	×	×	×	×	×	×	×	×
B	Standard 0.5 ng/mL			Sample-1			Sample-7			Sample-13		
C	Standard 2 ng/mL			Sample-2			Sample-8			Sample-14		
D	Standard 8 ng/mL			Sample-3			Sample-9			Sample-15		
E	Standard 20 ng/mL			Sample-4			Sample-10			Sample-16		
F	Standard 80 ng/mL			Sample-5			Sample-11			Sample-17		
G	Standard 200ng/mL			Sample-6			Sample-12			Sample-18		
H	×	×	×	×	×	×	×	×	×	×	×	×

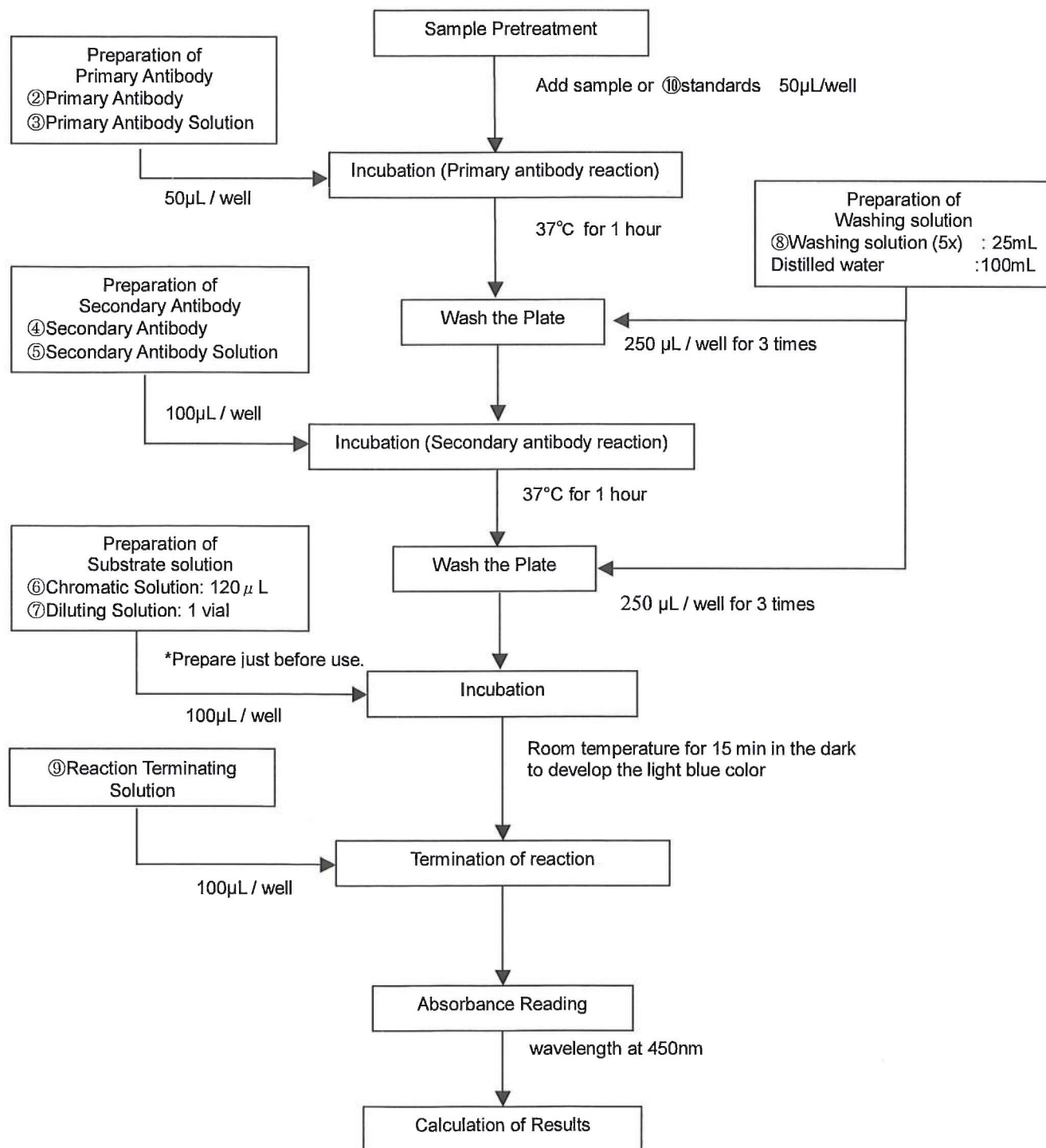
5. Standard Curve



6. References

1. S.Okamoto, and H.Ochi Chemical Abst. 129859a (1992)
2. H.Kasai, P.F.Crain, Y.Kuchino, S.Nishimura, A.Ootsuyama, and H.Tanooka Carcinogenesis 7, 1849-1851 (1986)
3. S.Toyokuni, T.Tanaka, Y.Hattori, Y.Nishiyama, A.Yoshida, K.Uchida, H.Hiai, H.Ochi, and T.Osawa Lab.Invest. 76, 365-374 (1997)
4. M.D.Evans, M.S.Cooke, I.D.Podmore, Q.Zheng, K.E.Herbert, and J.Lunec Discrepancies in the measurement of UVC-induced 8-oxo-2'-deoxyguanosine: Implications for the analysis of oxidative DNA damage. Biochemical and Biophysical Research Communications 259 pp374-378 (1999)
5. Tomoko Shimoike, Toyoshi Inoguchi, Fumio Umeda, Hajime Nawata, Katsumi Kawano and Hiroto Ochi The meaning of serum levels of advanced glycosylation end products in diabetic nephropathy. Metabolism 49(8) pp1030-1035 (2000)
6. WenYing Fan, Kazunori Ogusu, Katsuyasu Kouda, Harunobu Nakamura, Tomoaki Satoh, Hiroto Ochi and Hiroichi Takeuchi Reduced oxidative DNA damage by vegetable juice intake: A controlled trial. J Physiol Anthropol 19(6) pp287-289 (2000)
7. H.Ochi, M.Hashimoto, J.Kurashige Assessment of functional tea in human using oxidative stress profile technique. Proceedings of 2001 International Conference on O-Cha (tea) Culture and Science (2001)
8. M.S.Cooke, M.D.Evans and J.Lunec DNA repair: insights from urinary lesion analysis. Free Radical Research 36(9) pp929-932 (2002)
9. Tadashi Matsubasa, Takako Uchino, Shinryo Karashima, Yuichi Kondo, Kenichi Maruyama, Masako Tanimura and Fumio Endo Oxidative Stress in very low Birth Weight Infants As Measured by Urinary 8-OHdG. Free Radical Research 36(2) pp189-193 (2002)

7. Assay Flowchart



<Distributed by>

SCETI

DF Kasumigaseki Place, 3-6-7, Kasumigaseki,
Chiyoda-ku Tokyo 100-0013 Japan

URL: <http://www.sceti.co.jp/export/>

e-mail: exp-pet@sceti.co.jp

<Manufacturer>

Japan Institute For the Control of Aging (JaICA)
710-1, Haruoka, Fukuroi, Shizuoka 437-0122
JAPAN