

EZMeta™ Hydroxyl Free Radical Scavenging Capacity Colorimetric Assay Kit

Cat #: D-AKC1091

Size: 48T / 96T

Storage: Stored at -4°C for 12 months, protected from light

Product Information

Applicable samples: Animal and Plant Tissues, Serum, Plasma, Cells, Bacteria, Cell Supernatant, Juice, Honey, and Urine

Assay Principle

The hydroxyl radical $\cdot\text{OH}$, is the neutral form of the hydroxide ion (OH^-), highly reactive (easily becoming hydroxyl groups). Hydroxyl free radicals act on biological molecules such as proteins, nucleic acids, and lipids in the body, causing damage to cell structure and function, which in turn leads to metabolic disorders in the body and causes diseases. Hydroxyl free radical scavenging capacity is one of the important indicators of the antioxidant capacity of samples, and it has been widely used in the research of antioxidant health products and drugs. EZMeta™ Hydroxyl Free Radical Scavenging Capacity Colorimetric Assay Kit is specially developed for the detection of hydroxyl free radical scavenging capacity in various sample. The operation is simple and convenient, and the detection is more sensitive and accurate. In this assay, H_2O_2 / Fe^{2+} generates hydroxyl free radical through the Fenton reaction. Salicylic acid can effectively capture the generated hydroxyl free radical and reacts with them to produce 2,3-dihydroxybenzoic acid with a maximum absorption peak at 520 nm. After the substances with the capacity to scavenge hydroxyl free radical, resulting in the decrease of 520 nm absorbance. The value of 520 nm absorbance can reflect the hydroxyl free radical scavenging capacity of the sample.

Materials Supplied and Storage Conditions

Kit components	Size		Storage conditions
	48 T	96 T	
Ferrous Salt	10 mL	20 mL	4°C, protected from light
H ₂ O ₂	5 mL	10 mL	4°C, protected from light
Salicylic Acid	10 µL	20 µL	4°C, protected from light

Materials Required but Not Supplied

- Microplate reader or visible spectrophotometer capable of measuring absorbance at 520 nm
- Incubator, ice maker, refrigerated centrifuge
- 96-well plate or microglass cuvette, precision pipettes, disposable pipette tips
- Deionized water
- Homogenizer (for tissue samples)

Reagent Preparation

Ferrous Salt: Ready to use as supplied. Equilibrate to room temperature before use. Store at 4°C, protected from light.

H₂O₂: Ready to use as supplied. Equilibrate to room temperature before use. Store at 4°C, protected from light.

Salicylic Acid: Ready to use as supplied. Equilibrate to room temperature before use. Store at 4°C, protected from light.

Sample Preparation

1. Animal tissue: Weigh 0.1 g tissue, add 1 mL deionized water and homogenize in ice bath. Centrifuge at 10,000 g for 10 min at 4°C. Use supernatant for assay.
2. Plant tissue: Weigh 0.1 g tissue, add 1 mL deionized water and mash. Ultrasonic break in ice bath 5 min (power 20%

or 200 W, ultrasonic 3 s, interval 7 s, repeat 30 times). Centrifuge at 10,000 g for 10 min at 4°C. Use supernatant for assay.

3. Cell or bacteria: Collect 5×10^6 cells or bacteria into the centrifuge tube, wash cell or bacterium with cold PBS, discard the supernatant after centrifugation; add 1 mL deionized water to ultrasonically disrupt the cells or bacteria 5 min (power 20% or 200 W, ultrasonic 3 s, interval 7 s, repeat 30 times). Centrifuge at 10,000 g for 10 min at 4°C. Use supernatant for assay.

4. Plasma, serum and other biological fluids with high protein content or turbidity: Take 0.1 mL sample, add 1 mL deionized water and mix well. Centrifuge at 10,000 g for 10 min at 4°C. Use supernatant for assay.

5. Juice, honey, urine and other biological fluids with low protein content and clear: Tested directly.

6. Extract or drug: Formulated to a certain concentration, such as 0.5 mg/mL to test.

Assay Procedure

1. Preheated the microplate reader or visible spectrophotometer for more than 30 min, and adjust the wavelength to 520 nm, visible spectrophotometer was returned to zero with deionized water.

2. Add the following reagents respectively into each well:

Reagent	Blank Well (μL)	Standard Well (μL)	Test Well (μL)	Control Well (μL)
Ferrous Salt	40	40	40	40
H ₂ O ₂	0	40	40	0
Deionized Water	120	80	40	80
Salicylic Acid	40	40	40	40
Sample	0	0	40	40

Mix well, then incubate 20 min in 37 °C. And reading the values at 520 nm. Finally, calculate $\Delta A_{\text{Test}} = A_{\text{Test}} - A_{\text{Control}}$,

$\Delta A_{\text{Standard}} = A_{\text{Standard}} - A_{\text{Blank}}$. (Only one blank well and one standard well needs to be detected)

Note: In order to compare the hydroxyl free radical scavenging capacity of different samples, the same batch of samples must be diluted by the same multiple, and the extracts or drugs must be formulated to the same concentration.

Data Analysis

Calculation formula:

Hydroxyl free radical scavenging rate $D\% = (\Delta A_{\text{Standard}} - \Delta A_{\text{Test}}) \div \Delta A_{\text{Standard}} \times 100\%$

Typical Data

Examples

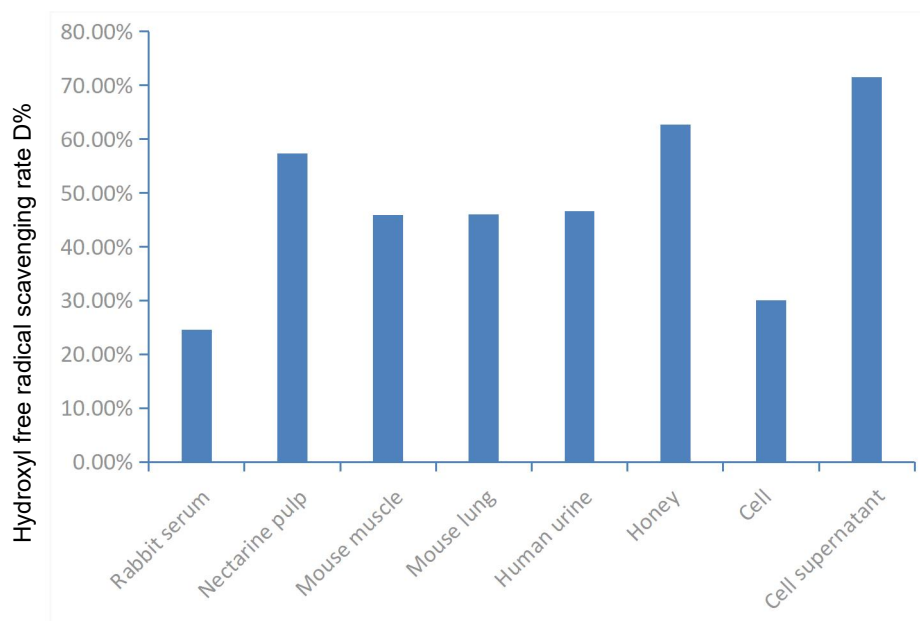


Figure 1. Hydroxyl free radical scavenging rate D% in Rabbit serum, Nectarine pulp, Mouse muscle, Mouse lung, Human urine, Honey, Cell, and Cell supernatant respectively. Assays were performed following kit protocol.

Disclaimer

The reagent is only used in the field of scientific research, not suitable for clinical diagnosis or other purposes.