Homogeneous Particles-Donor

Description

This series of products is designed for homogeneous luminescence. The series of particles adopts internal dyeing method and has stable performance. The homogeneous luminescence method is an important milestone in the field of chemiluminescence immunoassay, which can be performed directly without the separation and cleaning steps. The technology has many advantages, such as high throughput, low background, excellent repeatability and sensitivity, simple operation, small sample demand, wide detection range, etc., which is suitable for the development of automatic detection system. The homogeneous luminescence method is based on two kinds of nano-particles (donor particle and receptor particle), and the surface of the particle is cross-linked with specific antibodies. After incubation with the tested substance, the two antibodies formed a double-antibody sandwich immune complex with the antigen, thus keeping the distance between the two particles within 200 nmL. After irradiation by 680 nm excitation light, the donor particle produces singlet oxygen and diffuses to the receptor particle, which receives the energy and produces 615 nm emission light. The light signal is collected by the sensor and the concentration of the protein is calculated by mathematical fitting. When the tested substance does not contain the tested protein, no immune complex is formed, and the distance between the two kinds of particles is greater than 200 nm, which exceeds the transmission distance of singlet oxygen, then the receptor particle does not produce emission light.

For custom sizes, formulations or bulk quantities please contact our customer service department.

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Characteristics

Material: Polystyrene particles containing photosensitive substances

Surface group: Carboxyl group (COOH)

Density: 1.05 g/cm^3

Concentration: 10 mg/ml

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Size: 10 ml

Preservation solution: pure water

Additive: Trace surfactant

Refractive index: 1.59 (589 nm wavelength, 25°C)

Storage condition: Store at 2 - 8°C away from light, do not freeze

Quality guarantee period: 36 months

Donor particle (carboxyl) coupling method (taking an antibody coupling as an example)

1. Solution preparation

1.1 Activation buffer: 50 mM MES (morpholine ethanesulfonic acid), 50 mM NaCl, pH 6.0 ± 0.05;

1.2 EDC solution: 10 mg/mL EDC (1-(3-dimethylaminopropyl) -3-ethylcarbodiimide hydrochloride) solution, prepared with activation buffer, ready for use;

1.3 NHS solution: 10 mg/mL NHS (N-hydroxysuccinimide) solution, prepared with activation buffer, ready for use;

1.4 Labeling buffer: 40 mM boric acid buffer, pH 7.8 ± 0.05;

1.5 Particle sealing solution: 10% BSA, 7.5% glycine, pH 8.0;

1.6 Particle washing solution: 0.5% Triton X-405, 0.1% Tween-20 solution;

1.7 Particle preservation solution: homogeneous luminescent diluent (item No.: HI0101A).

2. Activation of particles

2.1 0.1 mL of donor microspheres (1% solid) suspension was taken into a 2 mL centrifuge tube with 1 mL of activation buffer, mixed ultrasonically, centrifuged at 15°C and 20000 g for 15-20 min to remove the supernatant, then 1 mL of activation buffer was added, and the supernatant was removed after ultrasonic dispersion;

2.2 Add 1 mL of microspheres coupling buffer, ultrasonic dispersion is uniform, add 7 µL EDC solution, swirl mix, then add 66 µL NHS solution, ultrasonic mix; The centrifuge tube was placed on the turntable at 25°C, 40 r/min, and activated for 15-20 min away from light.

2.3 Centrifuge at 15°C and 20000 g for 15-20 min to remove the supernatant, add 1mL activation buffer, disperse evenly by ultrasound and centrifuge to remove the supernatant;

2.4 Add 1 mL deionized water and repeat the washing step once.

3. Conjugation of particles and antibodies

3.1 Add 1 mL labeled buffer (BB), and the ultrasonic dispersion is uniform;

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3.2 The 20 μg reactor was added to the ultrasonic dispersed microsphere, mixed in a swirl, and the centrifuge tube was placed on a turntable at 25°C, 40 r/min, and coupled away from light for 2 h.

4. Sealing and preservation of particles

4.1 Add 0.1 mL of microsphere sealing liquid, mix it properly, place the centrifuge tube on the turntable at 25°C, 40 r/min, and seal it away from light for 2 h;

4.2 After closure, centrifuge at 15°C, 20000 g for 10 min to remove the supernatant, add 1 mL of microsphere washing liquid to disperse evenly by ultrasound, and centrifuge to remove the supernatant; Repeat the washing step 3 times;

4.3 At last, 1 mL microsphere preservation solution (homogeneous luminescent diluent, item No.: HI0101A) was added for uniform ultrasonic dispersion and stored in 2-8°C away from light for later use.

Principle of homogeneous luminescence

The homogeneous luminescence method is based on two kinds of nano-particles (donor particle and receptor particle), and the surface of the particle is cross-linked with specific antibodies. After incubation with the tested substance, the two antibodies formed a double-antibody sandwich immune complex with the antigen, thus keeping the distance between the two particles within 200 nmL. After irradiation by 680 nm excitation light, the donor particle produces singlet oxygen and diffuses to the receptor particle, which receives the energy and produces 615 nm emission light. The light signal is collected by the sensor and the concentration of the protein is calculated by mathematical fitting. When the tested substance does not contain the tested protein, no immune complex is formed, and the distance between the two kinds of particles is greater than 200 nm, which exceeds the transmission distance of singlet oxygen, then the receptor particle does not produce emission light.

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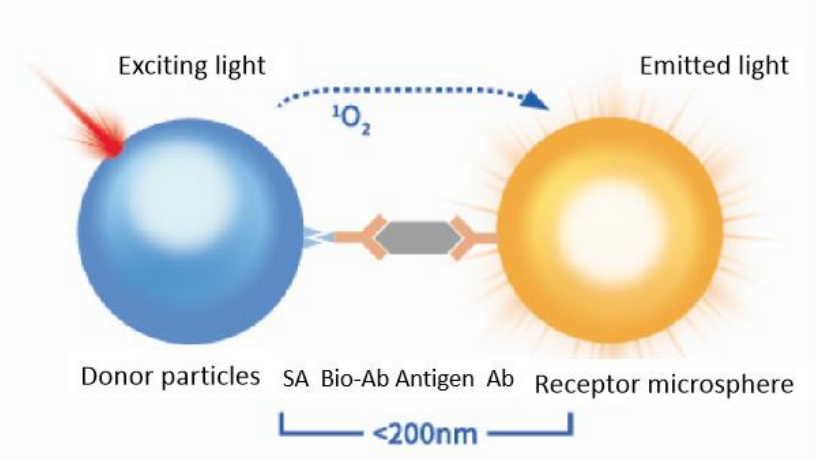

Advantages

Fast response: Fast detection speed

Simple operation: the reaction steps are simple, no cleaning steps, and the machine is easy to automate

Good repeatability: homogeneous no-cleaning, high precision

High sensitivity: Nanosphere reaction mode + homogeneous wash for high sensitivity

Application field

Clinical application: Detection of various serum markers (myocardial markers, infection markers, tumor markers, etc.)

Research applications: exosome detection, protein-protein interaction research, drug screening, cell signaling pathway research, kinase and enzyme activity determination, etc

Storage and Stability

This product should be stored at 2 - 8°C away from light. **DO NOT FREEZE**. Valid for 3 years.

Notes

1. Do not freeze, above 8°C should add a small amount of ice to maintain a suitable temperature, do not directly contact the ice with the microsphere;

2. Be sure to avoid light treatment during use;

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3. This product is relatively stable under neutral or alkaline conditions, do not mix polyvalent cations and organic solvents;

4. Confirm that the product is in a uniform suspension state before use, and some slight clumps can be removed by ultrasound;

5. It is recommended to conduct coupling test immediately after the activation of the product, and the activation state should not be preserved for a long time;

6. This product is only used for scientific research.

Ordering Information

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