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d2-conjugated streptavidin

For in vitro research use only
Storage temperature : 2-8°C

www.htrf.com

HTRF® package insert

Document reference : 610SADLA/B rev01 (February 2011)

Packaging details :

	384-well low volume plate (20 µL)
610SADLA	5,000 tests
610SADLB	20,000 tests

1. Background

Streptavidin is a biotin-binding tetrameric protein isolated from *Streptomyces avidinii*. The molecular weight is about 60 kDa.

Biotin, a 244 Da vitamin found in tissue and blood, binds with high affinity to streptavidin. It is the strongest known non-covalent biological interaction ($K_a=10^{15}M^{-1}$). The complexation is very rapid and, once formed, the complex is unaffected by external factors. Due to its small size, biotin can usually be conjugated to many proteins or peptides without significantly altering their biological activity.

Because of the ease of the biotinylation and the remarkable properties of the binding, the use of streptavidin has been applied to various applications such as immunoassays, receptor-ligand interactions, protein-protein interactions, kinase activity...

This toolbox reagent has been developed for High Throughput Screening using the HTRF technology. HTRF is an homogeneous time-resolved fluorescent technique, based on the energy transfer between a long-life fluorescent cryptate donor (Europium or Lumi4-Terbium) and HTRF acceptors such as XL665, d2, or other suitable acceptor fluorophores (i.e. GFP, fluorescein...). The transferred energy is then emitted as detectable fluorescent signal. In HTRF assays, the donor and the acceptor are conjugated to biomolecules (anti-tag antibodies, streptavidins, peptides,...) for studying molecular interactions.

References

- Chaiet I and Wolf FJ. The properties of streptavidin, a biotin binding protein produced by streptomycetes. *Arch Biochem Biophys.* 1964;106:1-5
Green NM. Avidin. In: *Advance In Protein Chemistry.* New York: Academic Press. 1975;29:85-133
Mathis G. Probing molecular interactions with homogeneous techniques based on rare earth cryptates and fluorescence energy transfer. *Clin Chem.* 1995;41:1391-7
Wilson A., Nimar L., Houghter A., Chersonson R., Conolly L., Lerner A. The structure of an Antigenic Determinant in a Protein. *Cell* 1994;37:767-778.
Trinquet E. Studying molecular interactions with the new Lumi4®-Tb Cryptate HTRF toolbox. SBS 15th annual conference 2009, Lille (France).

2. Reagent description

Streptavidin-d2 is produced at Cisbio international. Specific activity of the conjugate ranges from 1.5 to 2.5 Streptavidins / d2.

This conjugate is lyophilized in 100 mM phosphate pH 7.0, 0.1% protease free bovine serum albumin (BSA) and stabilizers.

In 384-well low volume plate format using a final volume of 20 µL, each vial from the two available sizes enables respectively the assessment of 5,000 and 20,000 tests on the basis of 50 ng of streptavidin per well, i.e. 100 ng of total conjugate per well. Actual concentration per well will be dependent on optimized assay conditions.

As a general rule, the streptavidin/biotin molar ratio (working concentration) should be 1/2. A titration around this value should be carried out.

3. Reagent handling

3.1. Preparation of the working solution

- Allow the stock solution to warm up at room temperature for at least 30 minutes.
- For the 5,000 test vial (610SADLA) : reconstitute the product with 250 µL of distilled water in order to obtain a 1 mg/mL solution (streptavidin concentration).
- For the 20,000 test vial (610SADLB) : reconstitute the product with 1 mL of distilled water in order to obtain a 1 mg/mL solution (streptavidin concentration).
- Vortex the solution gently.
- After reconstitution, the stock solution can be divided into aliquots and frozen at -20°C for additional use (according to storage conditions, see §5).
- Dilute with buffer the stock solution to the working concentration. Mix gently.

3.2. Recommended buffer

Most common buffers can be used for the preparation of the working solution, providing that the pH is maintained between 5.5 and 8.5. They can be complemented with BSA (0.1%) to prevent reagent coating, and detergents such as Tween 20, Triton X100, CHAPS (up to 0.5%)... may also be added. Avoid SDS, due to its denaturing effect. It is recommended to check the background signal by counting the buffer blank.

KF can play an essential role in the lanthanide cryptate protection by preventing the action of possible quenchers contained in the assay. KF is mandatory for HTRF assays using Europium cryptate. KF is generally used at a final concentration of 100 to 400mM, and is added to the conjugate working solutions or dispensed in a separate step, just before the readout. Assay using Lumi4-Tb cryptate donor, does not require KF.

4. Assay flexibility and miniaturization

When used as suggested, one vial from the two available sizes will provide sufficient reagent for 5,000 and 20,000 tests respectively using a 384-well low volume plate in 20 µL final assay volume (HTRF® packaged basis).

To move to other plate formats (96 half-well or 1536-well) and final volumes (100 µL to less than 10 µL), the volume of each assay component is simply proportionally adjusted in order to maintain the reagent concentrations as for the 20 µL final assay volume. For instance, in the case of the 1536-well format in 10 µL final volume, 2 times less material per well is used, thereby allowing 10,000 and 40,000 tests respectively to be run. The performances of the HTRF® assay remain the same whatever the level of miniaturization.

Assay components	Volume proportion	Assay format		
		1536-well (10 µL)	384-well low volume (20 µL)	96 half-well (100 µL)
Other assay components	2 volume	5 µL	10 µL	50 µL
Acceptor conjugate	1 volume	2.5 µL	5 µL	25 µL
Cryptate conjugate	1 volume	2.5 µL	5 µL	25 µL
	Small size	10,000 tests	5,000 tests	1,000 tests
	Bulk size	40,000 tests	20,000 tests	4,000 tests

Plate references : 96 half-well plate (Costar # 3694 or equivalent), 384-well low volume plate (Greiner # 784076), 1536-well (Greiner # 782086).

5. Storage conditions and stability

Lyophilized Streptavidin-d2 conjugate should be stored at 2-8°C until reconstituted. Under proper storing conditions, this reagent is stable until the expiry date indicated on the product description sheet.

Once reconstituted, stock solutions are stable 2 days at 2-8°C. They can be refrozen (at -20°C) and thawed only once. Do not repeat freezing and thawing.

Caution ! It is possible to combine donor and acceptor conjugates immediately before use. Do not store donor and acceptor conjugates mixed together for extended periods of time.