Biotin-SAM Formation Reagent

Cat.No: DNG-SAM02

DESCRIPTION

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Biotin-SAM Formation Reagent is specifically designed to prepare avidin-coated biosensors using streptavidin or NeutrAvidin. The biotinylated-surface prepared with this reagent can hold more streptavidin than conventional biotin-SAM surfaces. Additionally, the streptavidin surfaces prepared with this reagent can minimize non-specific protein adsorption.

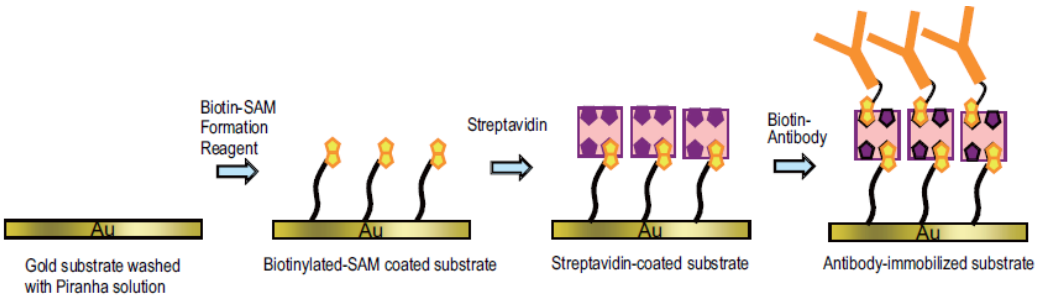

Fig1. Illustration of Biotin-SAM Formation Reagent

GENERAL PROTOCOL

General Protocol

Preparation of a Biotin-SAM surface on a gold substrate

1) Add 1 ml ethanol to a tube, and pipette to dissolve the reagent to prepare 1 mmol/l Biotin-SAM solution [a)]. Then, dilute the solution 10-fold with ethanol for Step 2).
2) Clean a gold surface of a substrate with Piranha solution [b)] prior to preparing Biotin-SAM. Immerse the substrate in the reagent solution prepared at Step 1) at room temperature and leave it for 1 hour.
3) Wash the substrate several times with ethanol and purified water sequentially [c)].
   a) If the reagent does not dissolve by pipetting, use an ultrasonic bath or warm the tube around 40ºC. Use freshly prepared reagent solution at Step 2).
   b) Mix 3 volumes of sulfuric acid and one volume of hydrogen peroxide solution to prepare Piranha solution. Since Piranha solution is severely caustic, handle with great care.
   c) Store the SAM-coated substrate under nitrogen gas in a tightly sealed glass container at 1-5ºC.

EXPERIMENT EXAMPLE

Experimental Example

Monitoring of protein binding processes on the biotin-SAM surface with QCM.

1) The Biotin-SAM-coated substrate was attached to a cell of a QCM instrument and set the cell on the instrument according to the manufacturer's manual.

45-1 Ramsey Road, Shirley, NY 11967, USA
Email: info@creative-diagnostics.com
Tel: 1-631-624-4882 Fax: 1-631-938-8221

2) 450 µl PBS was added to the cell. After the stabilization of the frequency, 20 µl streptavidin solution (10 mg streptavidin dissolved with 1 ml PBS) was applied.A)
3) After the stabilization of the frequency, frequency was monitored to evaluate non-specific binding of BSA (bovine serum albumin) and FBS (fatal bovine serum) by adding 8 µl BSA solution (10 mg BSA dissolved with 1 ml PBS) and then by adding 8 µl FBS solution (10 mg FBS dissolved with 1 ml PBS).B)
4) The solution was removed and the cell was washed with PBS several times.
5) 450 µl PBS was added to the cell.
6) After the stabilization of the frequency, 8 µl Biotin-BSA solution (12 mg Biotin-BSA dissolved with 1 ml PBS) was applied. C)
7) The frequency was measured to monitor an immobilization of Biotin-BSA to the streptavidin-coated substrate.

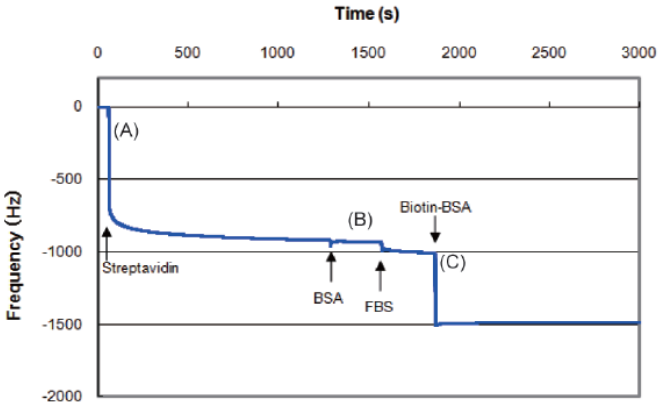

Fig. 2 Frequency monitoring during protein binding processes by QCM instrument.

Notes

Data was prepared by AFFINIX QNµ (Initium).

A) A large decrease in frequency was observed due to the streptavidin binding on the surface.

B) Very slight frequency change was caused by non-specific FBS binding.

C) A large and immediate change in frequency was observed by Biotin-BSA binding on the surface.

STORAGE AND SHIPPING

Storage	Store at 0-5ºC.