5-Bromo-4-chloro-3-indolyl β-D-glucuronide, cyclohexylammonium salt, tablets

Catalog Number B8049
Storage Temperature –20 °C

CAS RN 114162-64-0
Synonyms: X-GlcA; BC-Indicator; X-glucuronide

Product Description
Molecular Formula: C_{14}H_{12}BrClNO_{7} ⋅ C_{6}H_{13}N
Formula Weight: 521.79

The gus operon in Escherichia coli is composed of three genes.¹ The first gene, uidA (gusA), encodes the enzyme β-glucuronidase (GUS). GusB encodes a glucuronide permease. The function of the gusC gene product is unknown. 5-bromo-4-chloro-3-indolyl β-D-glucuronide (X-GlcA, X-Gluc) has been shown to be a good substrate for GUS, yielding a dark-blue insoluble cleavage product. The reaction (see Figure 1) initially yields a monomeric intermediate, which rapidly oxidizes to form the dimer, dichlorodibromoindigo (ClBr-indigo).

Figure 1.
Hydrolysis of X-GlcA by β-Glucuronidase

The intense coloration and insolubility of ClBr-indigo is ideal for use as an indicator of GUS activity in situ. It has been used as an indicator of E. coli contamination in various food items² and as an agent in urinary tract infections.³ The gusA gene has been used as an indicator of transfection and as a reporter gene for the function of regulatory elements in plants.⁴

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
To prepare a concentrated stock solution, 1 tablet will dissolve in 100 µl of N,N-dimethylformamide (DMF, Catalog Number D4551) with a final volume of ~125 µl (80 mg/ml final concentration), or 1 tablet will dissolve in 180 µl of dimethyl sulfoxide (DMSO) with a final volume of 200 µl (50 mg/ml final concentration). These stock solutions can be frozen at –20 or –70 °C.

Storage/Stability
Store the tablets at –20 °C. When stored at –20 °C, the tablets are stable for at least one year. Tablets are good as long as color remains white.
**Procedure**

As an indicator for the presence of *E. coli* in natural materials

Sigma’s functional test procedure is as follows: Prepare LB Agar (Catalog Number L2897) or LB Agar EZMix™ Powder (Catalog Number L7533). Cool to 55 °C. Add 250 µl of a 40 mg/ml stock solution of B8049 in DMSO to 100 ml of LB agar and mix gently to dissolve. The final concentration of X-GlcA in the medium will be 100 µg/ml. Pour plates and allow to cool for a few hours or overnight. Streak one plate with a *uidA*+ strain of *E. coli* (ATCC 11303) and a second plate with a *uidA*– strain of *E. coli* (GMS407). Incubate the plates at 37 °C for 24 hours.

As a substrate for the GUS reporter system to study plant gene expression

Please refer to published procedures.¹

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**References**


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