



New GLUCURONIDE-Substrates: New Chromogenic Substrates for the detection of beta-D-Glucuronidase activity in Liquid Media

Glycosynth is pleased to introduce our new substrates for beta-D-glucuronidase detection in liquid media. The new patented*, chromogenic substrates, DHN beta-D-glucuronide and Catechol beta-D-glucuronide, give highly-visible, purple and black colours (respectively) when cleaved in the presence of an iron salt.

The great advantage of these new substrates is that these dark colours show a remarkable contrast between positive and negative bacterial cultures. The substrates are easy to use in liquid or tube media under both aerobic and anaerobic conditions. They also allow good microbial growth. A further important advantage over most of the commonly encountered markers for *E. coli* is that the dark colours are able to mask the yellow produced by ONPG cleavage, making them particularly suitable for dual chromogenic systems for the detection of *E. coli* and coliforms**.

The substrates are able to detect other pathogens that express beta-D-glucuronidase, such as *Shigella sonnei*. Moreover, it has been observed that their sensitivity for *E. coli* detection is higher than the commonly used substrate, X-Gluc (our product No. 70065).

Advantages of beta-D-Glucuronidase Substrates

Dark colours, easy to observe

No UV light required

Different colours to other substrates commonly used in liquid media

Colours mask ONP – suitable for *E.coli*/coliform tests

Non-toxic to bacteria; very good growth

Effective under aerobic or anaerobic conditions

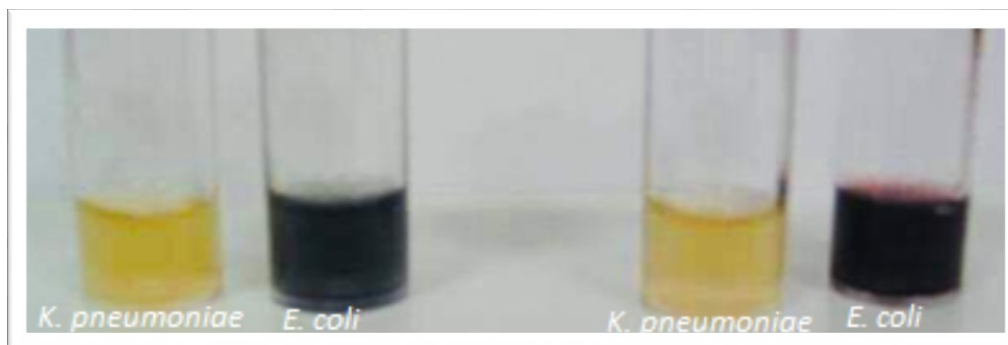
Soluble at 1% in water

Only requires the presence of an iron salt, as commonly used in X-Glucuronide media

Application

Coliforms, faecal coliforms and *E.coli* are important indicators of faecal pollution and are of major interest in the monitoring of water quality. The presence of *E.coli* is also of vital concern in a clinical setting as well as in food microbiology. Many media for *E.coli* incorporate a synthetic substrate for beta-D-glucuronidase.

Conventional detection of *E.coli* often relies on the fluorogenic end-point offered by MUG (4-Methylumbelliferyl beta-D-glucuronide [our product code 44064]. Both DHN and Catechol beta-D-glucuronide offer the cost and time saving advantage over MUG in that their intense colour, following hydrolysis, allows the clear detection of *E.coli* without the use of a UV lamp.



Left: ONPG and Catechol beta-D-glucuronide CHA salt (300 mg/L) with FAC (500 mg/L),

Right: ONPG and DHN beta-D-glucuronide CHA salt (300 mg/L) with FAC (500 mg/L).

Substrate	No. Negative Strains	No. positive strains	% Sensitivity
Catechol beta-D-glucuronide CHA salt (Glycosynth Product code 14065)	17	83	83
DHN beta-D-glucuronide CHA salt (Glycosynth product code 80065)	18	82	82
X beta-D-glucuronide CHA salt (Glycosynth product code 70065)	21	79	79
Rose beta-D-glucuronide CHA salt (Glycosynth product code 60065)	19	81	81

Above: When challenged against a range of *E. coli* strains chosen at random, DHN beta-D-glucuronide CHA salt was able to detect 82 out of 100 *E. coli* isolates after 18 hours incubation, giving a substrate sensitivity of 82 %. Catechol beta-D-glucuronide CHA salt was able to detect 83 out of 100 *E. coli* isolated after 18 hours incubation, a sensitivity of 83 %.

Pricing

Product Code	Product	Pack size	Price \$	Price €	Price £
14065	Catechol beta-D-glucuronide CHA salt Catechol beta-D-glucuronide cyclohexylammonium salt	250mg	67.00	64.00	45.00
		500mg	113.00	108.00	80.00
		1g	172.00	164.00	125.00
14066	Catechol beta-D-glucuronide Na salt Catechol beta-D-glucuronide sodium salt	250mg	73.00	70.00	50.00
		500mg	126.00	120.00	90.00
		1g	191.00	183.00	140.00
80065	DHN beta-D-glucuronide CHA salt 2,3-Dihydroxynaphthalene beta-D-glucuronide cyclohexylammonium salt	250mg	67.00	64.00	45.00
		500mg	113.00	108.00	80.00
		1g	165.00	158.00	120.00

Related Documentation

[The synthesis of novel chromogenic enzyme substrates for detection of bacterial glycosidases and their applications in diagnostic microbiology.](#) Bioorganic & Medicinal Chemistry 2018, 26 (17), 4841.

* [US9879303](#), [EP3066107](#), [US10443084](#)

** The exact colour produced may depend on the other components of the medium.