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TECHNICAL DATA SHEET

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Esculin (Aesculin) Hydrate — Catalogue No. ASC-8008

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Product Information

Product name	Esculin (Aesculin) Hydrate
Catalogue number	ASC-8008
Chemical name	6-(β-D-Glucopyranosyloxy)-7-hydroxy-2H-1-benzopyran-2-one
Synonyms	Aesculin; esculoside; esculetin 6-glucoside; 6,7-dihydroxycoumarin 6-glucoside
CAS No. / EC No.	531-75-9 / 208-517-5
Formula	$C_{15}H_{16}O_9 \cdot xH_2O$
Molecular weight	340.28 g/mol (anhydrous basis)
HS code	2938.90
Pack size	5 g

Description and Intended Use

Esculin is a natural coumarin glycoside found in horse chestnut (*Aesculus hippocastanum*) bark. It is a white to off-white crystalline powder that is slightly soluble in cold water and soluble in hot water. Its solutions fluoresce blue under long-wave UV light. It is used as the substrate in the esculin hydrolysis test and as the differential ingredient of esculin-containing culture media. For research use only. Not for human or veterinary use.

Mode of Action

Bacterial β-glucosidase (esculinase) hydrolyses esculin to D-glucose and esculetin (6,7-dihydroxycoumarin). Esculetin reacts with ferric ions to form a dark brown to black complex. Hydrolysis also removes esculin's blue fluorescence at 365 nm, so a positive test can be read as blackening or as loss of fluorescence.

Specifications

Parameter	Specification
Appearance	White to off-white crystalline powder
Identification	Conforms (HPLC retention time; blue fluorescence at 365 nm)
Assay (HPLC, anhydrous basis)	≥ 98.0%
Solubility (1% in hot water)	Clear, colourless solution
Water content (Karl Fischer)	Report value

Use in Culture Media

Medium	Esculin (g/L)	Target organisms
Bile Esculin Agar	1.0	Enterococci and group D streptococci
Bile Esculin Azide Agar	1.0	Intestinal enterococci in water
Oxford Agar	1.0	Listeria spp.
PALCAM Agar	0.8	Listeria spp.
Fraser Broth / Half Fraser Broth	1.0	Listeria enrichment

- Add esculin with 0.5 g/L ferric ammonium citrate (or ferric citrate) and the other ingredients before heating.

- Heat to dissolve and sterilise as the medium requires. Protect prepared media from light.

Interpretation

Result	Iron-containing medium	UV (365 nm)
Positive	Brown-black colour around growth	Loss of blue fluorescence
Negative	No blackening	Blue fluorescence remains

Quality Control (for esculin media)

Control strain	Inoculum (CFU)	Expected esculin reaction
Enterococcus faecalis ATCC 29212 (WDCM 00087)	50–100	Positive
Escherichia coli ATCC 25922 (WDCM 00013)	50–100	Negative

Storage and Stability

Storage	Store at 15–25 °C, protected from light, with the container tightly closed. Keep dry.
Re-test	Re-test before use after the re-test date on the label.

Safety

Not classified as hazardous under the GHS. Avoid breathing dust and wear gloves and eye protection when weighing. Read the Safety Data Sheet before use.

References

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- Facklam RR, Moody MD. Presumptive identification of group D streptococci: the bile-esculin test. Appl Microbiol. 1970;20(2):245–250.
- Curtis GDW, Mitchell RG, King AF, Griffin EJ. A selective differential medium for the isolation of Listeria monocytogenes. Lett Appl Microbiol. 1989;8:95–98.
- PubChem Compound Summary: Esculin (CID 5281417). National Center for Biotechnology Information.

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