en

Swarm Agar
Prepared culture medium

INFORMATION FOR PROFESSIONAL USE

CE IVD REF **TN1702** **20 tubes**

Intended use

Swarm agar is a medium which enables salmonellae to swarm and is used to obtain optimal expression of (flagellar) Salmonella H antigens.

Principle of the test [1)]

The swarm agar has a reduced agar concentration (approx. 0.6 %), which makes it possible for the salmonellae to swarm and which results in an improved expression of the H antigens. Well-developed H antigens are a precondition for the identification of the Salmonella H antigens using appropriate antibodies in slide agglutination.

Composition

The swarm agar is made up of Nutrient Agar I sifin REF TN1164 and Nutrient Broth I sifin REF TN1172.

Swarm Agar	**g/l**
Nutrient Agar I	20
Nutrient Broth I	16.5

Shelf life and storage

The swarm agar may be used up to the date given on the label if stored unopened at 2...8 °C.

Materials and equipment not supplied

Water bath (100 °C) or steam bath, sterile petri dishes (6 cm diameter), distilled water, inoculation loops, sterile spatula, pipettes, pipette tips, incubator

Test material and methodology [1), 2)]

1. **Preparation of swarm agar plates**
   Liquefy the swarm agar in tubes (10 ml) before use, e.g. in a pot of boiling water (~10 min). Then cool to ca. 40...45 °C and pour the contents of each tube into a sterile 6 cm diameter petri dish. The agar plates can be stored for up to 14 days at 2...8 °C (they must be protected from drying up)
2. **H antigen identification**
   Sprinkle the agar surface with approx. 100 µl sterile distilled water (this must be done under aseptic conditions). Remove some material from a colony of the Salmonella strain and apply to the middle of the plate in the form of a single point. Incubate the plate with the agar layer facing down for 16-20 hours at 35...37 °C. For slide agglutination, remove material from the edge of the plate.
3. **Phase inversio**
   If the strain is diphasic and only one H phase is identified, it is necessary to perform the phase inversion procedure to express the second phase.

3.1. Phase inversion by Sven Gard procedure (classical method): Mix 100 µl test reagent Anti-Salmonella H with 10 ml swarm agar (liquefied and cooled to 40...45 °C) in a sterile 6 cm diameter petri dish. When the agar has solidified, proceed as described in 2., i.e. sprinkle the plate with distilled water, inject it with the Salmonella strain, incubate and perform the slide agglutination test. If the phase inversion is unsuccessful, the procedure must be repeated.
3.2. Simplified procedure: As an alternative to the classical method, the following procedure may be performed instead: Add 100 µl test reagent Anti-Salmonella H drop by drop to the surface of the swarm agar plate and spread with a sterile spatula. Then inoculate the middle of the plate and incubate as described above. After 16-20 hours, the strain which swarms can be used to identify the second H phase. This simplified procedure usually enables the second phase to be identified using the monoclonal test reagents at the first attempt.

Interpretation of test results

The salmonellae (almost exclusively flagellated) do not grow on the swarm agar in colonies, but spread by swarming out from the point of inoculation to the periphery of the plate. If the strain fails to swarm to a sufficient degree, the procedure should be repeated.

Warnings and precautions

- Because it contains animal materials, it should be treated as potentially infectious and handled accordingly.
- All materials that have come into contact with infectious pathogens must be discarded according to the current directives concerning propper disposal waste from healthcare facilities.

Performance characteristics

As part of the performance assessment, using specified *Salmonella* test strains, the culture media productivity (growth, swarm motility) and characterisation of the H antigens were evaluated (tested by slide agglutination using the corresponding H antigen specific *Salmonella* testreagents [3)]):

Test strain	H antigens	Productivity		Specificity
		Growth	Swarm motility	Reactivity slide agglutination
Salmonella Paratyphi A 2,12:a:-	H:a	good	good	4+ *)
Salmonella Typhimurium 1,4, (5), 12 i:1,2	H:i, H:1, H:2	good	good	4+
Salmonella Heidelberg 1,4, (5), 12:r:1,2	H:r, H:1, H:2	good	good	4+
Salmonella Emek 8,20:g,m,s:-	H:g, H:m, H:s	good	good	4+
Salmonella Dublin 1,9,12, (Vi):g,p:-	H:g, H:p	good	good	4+

*) strongly positive agglutination

Vigilance

All serious incidents that have occurred in connection with the product must be reported to the manufacturer sifin and the competent authority of the Member State in which the user and / or patient is established.

Literature

1) Gard S. (1938). Das Schwärmphänomen in der Salmonella-Gruppe und seine praktische Ausnutzung. Z. Hyg. Infektionskr. 120: 615-619

2) Koehn A. (1970). Technical modification of the swarming plate method according to Sven Gard in Salmonella diagnosis. Zentralbl. Bakteriol. 215: 449-455

3) Instructions for use (sifin): Salmonella H agglutinating test reagents

en

Symbole Symbol Explanation

	Batch code (Lot)		Consult instructions for use
	Catalogue number		Use by YYYY-MM-DD
	In Vitro Diagnostic Medical Device		Temperature limitation
	Number of tubes per package		

Revision 1, Date of revision: 19/05/2022