Technical Data Sheet

CE Brain Heart Agar

Ordering number: 1.13825.0500

A high-quality full culture medium to be used both for the cultivation of fastidious pathogens from clinical specimens and as a base medium for the production of various special culture media.

In 1919, ROSENOW described the isolation of difficult-to-cultivate bacteria from infections of the oral cavity using dextrose broth to which he added brain tissue. Brain-heart broth/agar is a modification of the medium described by ROSENOW in which the brain tissue has been replaced by brain extract and the calcium carbonate by di-sodium hydrogen phosphate (MacFADDIN, 1985; ATLAS, 1997). Brain-heart agar additionally contains agar-agar

IVD in vitro diagnosticum - For professional use only

Mode of Action

The culture medium is suitable for the cultivation of many fastidious bacteria such as streptococci, pneumococci and meningococci. Gonococci can be cultivated after the addition of ascites.

The culture substrate of brain-heart extract and peptones provides a broad spectrum of organic nitrogen compounds, carbon sources, sulfur, vitamins and trace elements. Glucose serves as an additional carbon and energy source. The pH is adjusted and stabilized by di-sodium hydrogen phosphate.

The nutrient supply is increased by the addition of blood (5 - 10%). Thus DOUGHERTY et al. (1996) successfully used brain heart blood/agar to isolate fastidious bacteria such as *Mycobacterium avium, Bartonella henselae* or *Cryptococcus neoformans* from the blood of AIDS patients.

Brain-heart agar is also described as a base culture medium for various selective media.

QUEIROZ et al. (1987) developed a selective medium for the detection of *Campylobacter pylori* on the basis of brain-heart agar (Belo Horizonte medium/BHM).

MacKENZIE et al. (2002) determined the antibiotic sensitivity of *Staphylococcus* isolates from blood cultures on brain-heart agar to which vancomycin or teicoplanin had been added.

The isolation of *Brachyspira aalborgi* from feces on brain-heartblood agar to which spectinomycin and polymyxin B had been added was described for the first time in 2003 (BROOKE et al.).

By adding 9-chloro-9-(4-diethylaminophenyl)-10-phenylacridan to brain-heart agar, *Pseudomonas aeruginosa* could be isolated from sputum, urine and feces (ARAJ, 1984).

Apart from its use in bacteriology, brain-heart agar is also suitable for the isolation of pathogenic fungi from clinical material such as specimens from eye infections, cerebrospinal fluid, blood, bone marrow, urine, secretions from the vagina and respiratory tract, as well as specimens from the upper respiratory tract such as ears, nose and mouth (ROBERTS et al., 1985). To inhibit the growth of accompanying

microorganisms it is recommended to add a mixture of gentamycin (5 mg/l) and chloramphenicol (16 mg/l) or penicillin (20 mg/l) and streptomycin (40 mg/l) to brain-heart agar.

Alternatively, gentamycin can be added to brain-heart agar in a concentration of 50 mg/l without addition of further antibiotics.

Cycloheximide (0.5 mg/l), too, can be added to brain-heart agar, also in combination with the above-named antibiotics. As some pathogenic fungi are inhibited by cycloheximide, a parallel specimen should also always be tested on a medium without cycloheximide.

For the detection of highly fastidious fungi, a blood-containing brain-heart agar (5 - 10% sheep blood) should also be inoculated in parallel. This may contain the above-named antibiotics.

Typical Composition

Culture substrate (brain-heart extract and peptones)	27.5
D(+)glucose	2.0
sodium chloride	5.0
di-sodium hydrogen phosphate	2.5
agar-agar	15.0

Preparation

Completely dissolve 52 g of brain-heart agar in 1 liter of deionized water while heating in a steam pot, autoclave (15 minutes at 121°C), cool on a water bath to 45 - 50°C and pour plates.

With addition of blood (5% blood): homogeneously mix 95 ml of sterile base culture medium at 45 - 50°C with 5 ml of blood and pour plates.

The ready-to-use culture medium has a pH of 7.4 ± 0.2 at 25°C.

The prepared plates with base culture medium are clear to slightly opalescent and yellow-brown. With the addition of blood they are light red and non-hemolytic.

Specimen

e. g. Sputum, urine, feces or blood.

Application and Eveluation

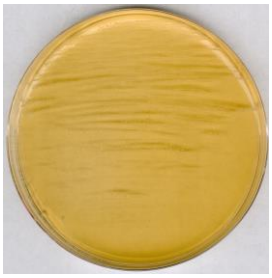
Application

Streak out the clinical specimens on the brain-heart agar directly after sampling using the surface method. Incubation temperatures and times depend on the intended application. Bacteria are normally detected after incubation at 35°C for 1 to 2 days. Fungal cultures are usually incubated at 30°C for up to 4 weeks. In the case of longer incubation times the plates must be protected against drying out.

Evaluation

Each growth counts as a positive result. The isolated colonies are subsequently identified by appropriate tests.



Lactobacillus acidophilus ATCC 4356 | Staphylococcus aureus ATCC 25923 | Streptococcus pneumoniae ATCC 6301 | Streptococcus pyogenes ATCC 12344

Analytical Specificity

The base culture medium contains no inhibitors or dyes; a broad spectrum of bacteria and fungi grow on it. Differentiation is only possible on the basis of typical colony morphology.

Also after the addition of blood, differentiation is difficult due to the form of hemolysis, since hemolysis is inhibited by the glucose content.

Brain-heart agar becomes a selective agar by the addition of inhibitors (antibiotics).

Further tests for the identification of isolates are necessary.

Quality Control

The base culture medium contains no inhibitors.

Control Strains	ATCC #	Inoculum CFU	Incubation	Expected Results
Escherichia coli	25922	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Staphylococcus aureus	25923	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Streptococcus pyogenes	12344	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Streptococcus pneumoniae	6301	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Enterococcus faecalis	19433	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Bacillus cereus	11778	10^3-10^5	24 h at 35°C	Recovery rate % (with and without blood) >70
Candida albicans	10231	10^3-10^5	3 d at 28°C	Recovery rate % (with and without blood) >70
Aspergillus brasiliensis, formely A. niger	16404			Growth good / very good

Please refer to the actual batch related Certificate of Analysis.

Literature

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Ordering Information

Product	Cat. No.	Pack size
Brain Heart Agar	1.13825.0500	500 g

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