PROREADY
Ready To Use Culture Media

CE IVD

UPUTSTVO ZA UPOTREBU (SRB)

Mueller Hinton Agar Plate

Podloga za ispitivanje osetljivosti mikroorganizama na antimikrobne agense.

Sadržaj pakovanja:

Šifra artikla (pakovanja) REF	Opis	Šifra primarnog pakovanja:	Broj podloga
PRM173V20	Podloga izlivena u petri posudama od ø90	**PRM173**	**20**
PRM173V60			**60**
PRM173V240			**240**
PRM173M40	Podloga izlivena u petri posudama od ø50		**40**

Uputstva

Pod aseptičnim uslovima se standardna suspenzija test organizma nanosi (obično brisom) preko cele površine podloge..

Princip i interpretacija

Formulacija Mueller Hinton prvobitno je razvijena kao jednostavna, prozirna podloga za kultivaciju patogenih Neisseria spp. (1). Zatim su razvijene druge podloge koje su zamenile upotrebu Mueller Hinton Agara za kultivaciju patogenih Neisseria spp., ali je postala široko korišćena u određivanju rezistencije gonokoka i drugih organizama na sulfonamide.
Mueller Hinton Agar se sada koristi kao podloga za testiranje antimikrobne osetljivosti (2). Mueller Hinton Agar se preporučuje za difuziju antimikrobnih agenasa impregniranih na papirnom disku kroz agarizovanu podlogu (disk-difuziona metoda), kao što je opisano u CLSI Approved Standard (3). Mueller Hinton Agar je izabran od strane CLSI zbog nekoliko razloga:
I. Pokazuje dobru reprodukciju od serije do serije u testovima antimikrobne osetljivosti.
II. Ima niske vrednosti inhibitora sulfonamida, trimetoprima i tetraciklina.
III. Podržava rast većine nezahtevnih bakterijskih patogena.
IV. Evidentirano je mnogo podataka i iskustva o njegovom učinku (9).
Kirby-Bauer i ostali su preporučili ovu podlogu za izvođenje testova osetljivosti na antibiotike korišćenjem jednog diska visoke koncentracije (4). WHO komitet za standardizaciju testa osetljivosti je prihvatilo Mueller Hinton Agar za određivanje antimikrobne osetljivosti organizama zbog njegove reproduktivnosti (5).
Goveđi infuzum i kiselinski hidrolizat kazeina obezbeđuje azotna jedinjenja, ugljenik, sumpor i druge esencijalne hranljive materije. Skrob deluje kao zaštitni koloid protiv toksičnih supstanci prisutnih u podlozi. Hidrolizom skroba dobija se dekstroza koja služi kao izvor energije. Ovi sastojci su izabrani zbog niskog sadržaja timina i timidina što je važno prilikom određivanja MIC vrednosti za Enterococcus fecalis u slučaju sulfametaksazoltrimetoprima (SXT). Koncentracije jona kalcijuma i magnezijuma su prilagođene kako bi se obezbedile količine koje preporučuje CLSI potrebne za dobijanje tačne MIC vrednosti u slučaju aminoglikozida i Pseudomonas aeruginosa (2). Postupak Kirby-Bauer-a je zasnovan na difuziji antimikrobnih agenasa impregniranih na papirnim diskovima u agarizovanu podlogu. Ovaj metod koristi disk sa jednom koncentracijom antimikrobnog agensa, a diametri zona inhibicije su u korelaciji sa vrednostima minimalne inhibitorne koncentracije (MIC) (1,2,6). Standardna suspenzija mikroorganizama se brisom nanosi preko cele površine podloge. Papirni diskovi impregnirani određenim količinama antimikrobnih agenasa se onda stavljaju na površinu podloge, inkubiraju i zone inhibicije se mere oko svakog diska. Osetljivost se određuje upoređivanjem sa CLSI standradima (7). Faktori koji utiču na ispitivanje antimikrobne osetljivosti disk-difuzionom metodom su: debljina agara, potencijal diska, koncentracije inokuluma, pH podloge i sposobnosti test organizma da produkuje beta-laktamazu (7,9). Mueller Hinton Agar nije pogodan za ispitivanje osetljivosti disk-difuzionom metodom u slučaju sporo- rastućih organizama, anaeroba i kapnofila. Kod sporo-rastućih organizama produženo vreme inkubacije može uticati na lošu difuziju antibiotika sa diska i onemogućiti precizno očitavanje (8).

Kontrola kvaliteta

Podaci i rezultati kontrole kvaliteta dati su u sertifikatu analize za svaku seriju.

Skladištenje i rok upotrebe

Čuvati između 15-25°C. Nakon prvog otvaranja čuvati na 2-8°C. Upotrebiti pre isteka datuma označenog na nalepnici.

Mere predostrožnosti

Ovaj proizvod ne sadrži hazardne supstance u koncentracijama koje su iznad propisanih limita određenih važećim zakonskim regulativama i zato nije klasifikovan kao opasan. Ipak, preporučeno je slediti smernice iz bezbednosnog lista za pravilnu upotrebu. Ovaj proizvod je namenjen isključivo za upotrebu u laboratorijskim uslovima, od strane profesionalno obučene osobe.
Proizvod ne upotrebljavati ukoliko je primarno pakovanje oštećeno ili proizvod ne odgovara navedenim karakteristikama.

Odlaganje otpada

Odlaganje otpada mora biti u skladu sa nacionalnim i lokalnim regulativama koje su na snazi. Svaka laboratorija je odgovorna za rukovanje i odlaganje otpada koji nastaje u toku rada.

Upotrebljeni simboli

CE	Evropski znak usaglašenosti		Držati uspravno
IVD	In vitro dijagnostičko medicinsko sredstvo	REF	Kataloški broj
	Ne izlagati direktno sunčevim zracima	LOT	Lot broj
	Konsultovati uputstvo za upotrebu		Rok upotebe
	Ne koristiti više puta		Temperatura čuvanja
Σ	Veličina pakovanja		Proizvođač
EC REP	Ovlašćeni predstavnik u Evropskoj uniji		

EC REP	Salus Cons kft. 6722 Szeged, Bécsi krt 23, HUNGARY e-mail: office@saluscons.com

Literatura

1. Mueller J. H. and Hinton J., 1941, Proc. Soc. Exp. Biol. Med.<(>,<)>48:330.
2. National Committee for Clinical Laboratory Standards, 2000, Approved Standard: M7-A5. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that grow aerobically, 5th Ed., NCCLS, Wayne, Pa.
3. NCCLS Approved Standard: ASM-2, 1979, Performance Standards for Antimicrobic disc Susceptibility Tests, 2nd Ed., National Committee for Clin. Lab. Standards.
4. Bauer A. W., Kirby W. M., Sherris J. L. and Turck M., 1966, Am. J. Cl in. Pathol., 45:493.
5. Present Status and Future Work, WHO Sponsored collaborative study, Chicago, Oct. 1967.
6. Ericsson H. M. and Sherris J. L., 1971, Acta Pathol. Microbiol., Scand. Sect B Suppl., 217:1.
7. National Committee for Clinical Laboratory Standards, 1986, Proposed Standards, M6-P, NCCLS, Villanova, Pa.
8. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore
9. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Ed.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.

Broj rešenja o registraciji: 515-02-02534-22-003

PROREADY
Ready To Use Culture Media

CE IVD

INSTRUCTION FOR USE (EN)

Mueller Hinton Agar Plate

Mueller Hinton Agar is used for determination of susceptibility of microorganisms to antimicrobial agents.

Package contents:

Item code (packaging) REF	Description	Primary packaging code:	Number of products
PRM173V20	Substrate poured into petri dishes of ø90	**PRM173**	**20**
PRM173V60			**60**
PRM173V240			**240**
PRM173M40	Substrate poured into petri dishes of ø50		**40**

Directions

Standard suspension of test microorganisms aseptically swabbed over the entire surface of the medium.

Principle and interpretation

The Mueller Hinton formulation was originally developed as a simple, transparent agar medium for the cultivation of pathogenic Neisseria species (1). Other media were subsequently developed that replaced the use of Mueller Hinton Agar for the cultivation of pathogenic Neisseria species, but it became widely used in the determination of sulfonamide resistance of gonococci and other organisms.
Mueller Hinton Agar is now used as a test medium for antimicrobial susceptibility testing (2). Mueller Hinton Agar is recommended for the diffusion of antimicrobial agents impregnated on paper disc through an agar gel as described in CLSI Approved Standard (3). Mueller Hinton Agar has been selected by the CLSI for several reasons:
i. It demonstrates good batch-to-batch reproducibility for susceptible testing.
ii. It is low in sulfonamide, trimethoprim and tetracycline inhibitors.
ii. It supports the growth of most non-fastidious bacterial pathogens.
iii. Many data and much experience regarding its performance have been recorded (9).
Kirby-Bauer et al recommended this medium for performing antibiotic susceptibility tests using a single disc of high concentration (4). WHO Committee on Standardization of Susceptibility Testing has accepted Mueller Hinton Agar for determining the susceptibility of microorganisms because of its reproducibility (5).
Meat infusion and casein acid hydrolysate provide nitrogenous compounds, carbon, sulphur and other essential nutrients. Starch acts as a protective colloid against toxic substances present in the medium. Starch hydrolysis yields dextrose, which serves as a source of energy. These ingredients are selected for low thymine and thymidine content as determined by MIC values for Enterococcus faecalis with sulfamethoxazoletrimethoprim (SXT). Calcium and magnesium ion concentrations are adjusted to provide the amounts recommended by CLSI to give the correct MIC values with aminoglycosides and Pseudomonas aeruginosa (2). The Kirby-Bauer procedure is based on agar diffusion of antimicrobial substances impregnated on paper discs. This method employs disc with a single concentration of antimicrobial agent and the zone diameters observed are correlated with minimum inhibitory concentration (MIC) values (1, 2, 6). A standardized suspension of the organism is swabbed over the entire surface of the medium. Paper discs impregnated with specific amounts of antimicrobial agents are then placed on the surface of the medium, incubated and zones of inhibition around each disc are measured. The susceptibility is determined by comparing with CLSI standards (7). The various factors, which influence disc diffusion susceptibility tests, are agar depth, disc potency, inoculum concentration, pH of the medium and beta-lactamase production by test organisms (7, 9). Mueller Hinton Agar is not appropriate for assay by disc diffusion method with slow growing organisms, anaerobes and capnophiles. With slow growing organisms, increased incubation may cause deterioration of diffusing antibiotic and produce unprecise readings (8).

Quality control

The data and results of quality control are given in the certificate of analysis for each lot.

Storage and shelf life

Storage between 15-25°C. After opening storage between 2-8°C. Use before expiry date on the label.

Warning and precautions

In vitro diagnostic use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques.

Symbols used on labels

CE	European Conformity mark		This side up
IVD	is an in vitro diagnostic medical device (IVD)	REF	Catalogue number
	Do not expose directly to sunlight	LOT	Batch code
	Consult instructions for use		Use-by date
	Do not re-use		Temperature limit
	Pack size		Manufacturer
EC REP	European Authorized Representative (Authorised Representative)		

EC REP	Salus Cons kft. 6722 Szeged, Bécsi krt 23, HUNGARY e-mail: office@saluscons.com

Reference

1. Mueller J. H. and Hinton J., 1941, Proc. Soc. Exp. Biol. Med., 48:330.
2. National Committee for Clinical Laboratory Standards, 2000, Approved Standard: M7-A5. Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that grow aerobically, 5th Ed., NCCLS, Wayne, Pa.
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4. Bauer A. W., Kirby W. M., Sherris J. L. and Turck M., 1966, Am. J. Cl in. Pathol., 45:493.
5. Present Status and Future Work, WHO Sponsored collaborative study, Chicago, Oct. 1967.
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