STANDARD APPLICATION

MEDICAL MICROBIOLOGY

Use of HettCube incubators and cooled incubators to demonstrate the presence of mycobacteria and for their differentiation

Tuberculosis, which once claimed the lives of many people, was believed to be a disease that had been virtually eradicated. However, the poor conditions under which many people live, increased frequency of travel to distant countries and immigration from crisis zones mean that this disease is once again on the increase. It is therefore necessary to culture the mycobacteria responsible and differentiate between them.

Culturing

The specimens are first homogenised, decontaminated and concentrated through centrifugation.* They are then cultured on three different types of media. A higher CO_2 level (5-7%) is recommended. Mycobacteria grow slowly, and this is the reason for the long incubation period of up to eight weeks.

Differentiation of the mycobacteria

The first indication of a tuberculosis diagnosis is the presence of acid-fast rods upon staining with Ziehl-Neelsen stain. M. tuberculosis differs from most other mycobacterial strains through its characteristic eugonic growth (dry, crumbly). In addition, it is possible to differentiate between the different mycobacterial strains through the presence of metabolic products. In the niacin test agar slants containing Löwenstein-Jensen medium are inoculated and an extract derived from the cultured bacteria. The tubes must be inclined to enable the extract to be derived. The Hettich RackL and RackXL are optimal for this ***. The addition of chemicals causes a change in colour which demonstrates the presence of niacin, indicative of M. tuberculosis.

Sensitivity to chemotherapeutics

The sensitivity of mycobacteria to different chemotherapeutics can also be used for differentiation purposes. The inoculated agar slants are covered with the chemotherapeutic agent and the growth or absence of growth of the colonies is recorded. Since the surface of the agar must be fully covered, the Hettich racks are also recommended here.

Incubation conditions **

	Temperature	Duration
Culture	36°C ± 1 30°C ± 1 (sample material from peripheral regions of the body)	Up to 8 weeks, in individual cases up to 12 weeks
Differentiation (Lebek medium)	36°C ± 1	At least 3 weeks
Sensitivity test	36°C ± 1	28 days

Hettich-Rack L (Cat. No. 60027) and Hettich-Rack XL (Cat. No. 60028) for bacteria cultures on slanted agars.

* For example with the Universal 320 R with 1494 rotor, 1427 carrier and 5272 adapter
** Observe the instructions of the manufacturer!
*** Comprehensive information on the use of Hettich racks for agar slants is available upon request

Hettich solution

Model	Cat. No.
HettCube 200	62000
HettCube 400	64000
HettCube 600	66000
HettCube 200 R	62005
HettCube 400 R	64005
HettCube 600 R	66005

Model without IVD	Cat. No.
HettCube 200	62001
HettCube 400	64001
HettCube 600	66001
HettCube 200 R	62006
HettCube 400 R	64006
HettCube 600 R	66006

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