

Reduced thermal and mechanical stress to erythrocytes aids production of high quality blood agar

The combination of MEDIAJET Petri dish filler and DOSE IT P910 peristaltic pump, from INTEGRA Biosciences AG, have been shown to minimise the thermal and shearing force stress to red blood cells (erythrocytes) resulting in high quality blood agar plates for the fast and reliable determination of haemolytic patterns of Gram positive cocci (e.g. Streptococci).

The Institute for Medical Microbiology (IMM) (Lucerne, Switzerland) is a centre of excellence for infectious diseases covering the central part of Switzerland. The IMM offers a variety of microbiological diagnostics services to public and private hospitals as well as resident doctors. For industrial companies, a broad set of microbiological quality control methods is also offered. With a highly qualified team of 40 members the institute is also an accredited training centre for biomedical analysts, doctors and scientists.



Determination of haemolysis type is an important technique used in microbiology and medical diagnostics. The haemolytic patterns of various Gram positive cocci (e.g. Streptococci) may be differentiated by haemolysis of red blood cells on blood agar plates. For the reproducible production of high quality blood agar precise control of dispensing temperature and the time the blood remains at the dispensing temperature are crucial parameters to minimise lysing of blood cells. Without precise control of these factors which minimises stress induced damage of erythrocytes, the exact determination of haemolysis type is very difficult and time-consuming.

Frau Trudy Rutz, Manager Biomedical Analyst at the IMM commented “Our experience has shown that the temperature of the agar blood mixture during the pouring of the agar plates is a critical determinant of blood agar quality. Therefore it is very important to select a media preparation system that enables you to minimise the denaturation of red blood cells due to overheating and mechanical stress (shearing force) as much as possible”.



Using an INTEGRA Biosciences MEDIACLAVE media preparation system, the IMM was able to optimise the process by setting and maintaining the dispensing temperature to 45 °C. However, the true innovation in the IMM blood agar preparation technique was made possible by the combination of the MEDIAJET Petri dish filler and the DOSE IT peristaltic pump. Using the two systems in combination allowed IMM to mix the blood immediately before pouring the plate resulting in little heat and shearing force induced blood cell lysis as the required processing time was minimised. This methodology advance was aided using a tubing set specifically designed for blood agar preparation, resulting in a uniform high quality light red blood agar

throughout the whole batch, independent of the production volume.

The MEDIACLAVE is a highly safe and economical system for sterile preparation of media from 1 to 9 litres. The MEDIACLAVE offers complete control and recording of all process parameters to guarantee a consistent GLP record that can be validated. Operated in conjunction with the MEDIAJET automated Petri dish filler, up to 540 standard sized agar plates can be conveniently and cost effectively prepared in less than 2.5 hours. The MEDIAJET and the MEDIACLAVE expand the capabilities of laboratories involved with the sterilisation of microbiological media and production of agar plates.

The new generation DOSE IT peristaltic pump makes the dispensing of culture media, buffers and other solutions easy and efficient. An intuitive multilingual user interface, coupled with large ergonomically designed display and keypad, makes the DOSE IT extremely simple to program and operate. Providing high accuracy dispensing across a broad range of dose volumes (0.1 ml – 10 L) and flow rates (0.6 ml/min – 5L/ min) the versatility of the DOSE IT reduces the need for a laboratory to have several single purpose pumps.

Further information on production of high quality blood agar using the MEDIACLAVE / MEDIAJET / DOSE IT combination please contact INTEGRA Biosciences on telephone +41-81-286-9530 or email info@integra-biosciences.com