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excellence in microbiology

Whitley Workstations
Anaerobes and Food

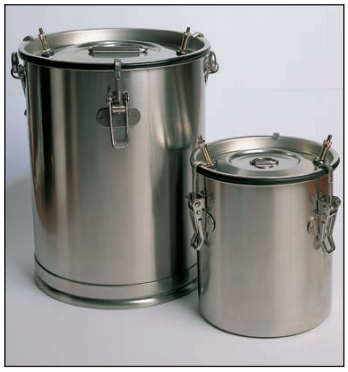
Between 1992 and 1999, 1,426 food-borne general outbreaks of infectious intestinal disease were reported to the UK Public Health Laboratory Service Communicable Disease Surveillance Centre – over 5,000 people became ill resulting in 186 hospital admissions and nine deaths

In the United States in the period from 1983 to 1997, *Clostridium perfringens* was the third most common cause of illness following the consumption of contaminated food

Anaerobic microbiology tends to be confined to clinical laboratories yet official figures released in the UK and USA confirm that food-borne illnesses are becoming more common and affecting growing numbers of people. As a consequence, food microbiologists should be routinely looking for anaerobic organisms so that contaminated food is less likely to be released for consumption.

Salmonella spp and *Clostridium perfringens* are the most frequently reported bacteria causing food-borne infections. When *Clostridium perfringens* produces spores, an enterotoxin is produced, causing illness. The sources of infection are typically contaminated meat and poultry products.

Another anaerobe of interest to food microbiologists is *Clostridium botulinum* which makes up a group of four physiologically and phylogenetically distinct clostridia that share the common feature of producing an extremely potent toxin which attacks the nervous system.



Anaerobic Jars

Whitley DG250 Workstation

Two members of this group, *Cl. botulinum* (Group I) which are highly proteolytic, and *Cl. botulinum* (Group II) which are non-proteolytic, are responsible for food-borne botulism. Consumption of food containing as little as 30ng of pre-formed toxin can result in severe illness. Fortunately food-borne botulism is relatively rare but the severity of the disease, high cost of treatment, and the potentially high economic impact ensures that the prevention of botulism outbreaks remains a major objective for those working in the food industry.

Non-proteolytic *Cl. botulinum* is a particular hazard for the safe production of minimally heat-processed refrigerated foods. The heat treatment applied to these foods results in the elimination of vegetative cells, but not bacterial spores. Therefore, the hazard presented by the organisms will initially be in the form of spores. Growth of these spores is extremely complex and comprises numerous steps. In all cases, however, spore germination must be initiated. There are different ways to trigger germination including exposing the spores to nutrient, enzymatic and/or physical stimuli.

Technical developments have brought anaerobic culture procedures within reach of all laboratories. The only approach available for many years was the use of anaerobic jars – refined and developed well into the 1970s. From the 1980s onwards, anaerobic workstations became available and were quickly acknowledged as providing much improved isolation rates.

However, until recently, microbiologists working with low numbers of samples tended to use anaerobic jars as they felt unable to justify the purchase price and running costs of workstations.

The introduction of our Whitley DG250 Workstation enables all food laboratories to justify the purchase of an anaerobic workstation. Our award-winning design team has created a workstation with both a generous working area and an incubation capacity of 240 x 90mm Petri dishes. This gives the DG250 an impressive 33% more capacity than any other unit of comparable size. When used only as an incubator, as many as 400 x 90mm Petri dishes can be accommodated. Requiring just 810mm of bench width, the DG250 is also perfect for laboratories where space is limited.

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