

Keeping it safe and fresh in chilled foods

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Chilled and frozen ready prepared dishes are now familiar items in just about every supermarket in the UK with a mouth watering variety from which to choose.

For some 20 years now, one UK company has pioneered Indian, Thai and other regional cuisine in this market, using traditional recipes and methods in combination with modern production technology.

Noon Products, now part of Kerry Foods, may not be familiar to everyone, but its products are, since the company makes dishes from bhajjis to biryanis and thai green curry to tikka masala for many of our major stores.

With its limited shelf life, chilled food poses specific challenges when it comes to microbiological testing, both in the development of new products and quality control of production batches. Noon Products has opened spacious new laboratories at its Southall production facility and this article looks at the laboratory's regime, the approach to microbiology testing and some of the methodologies used.

Laboratory tests

The laboratory at Noon Products houses both chemistry and microbiology testing,



Much of the laboratory's work involves microbiological quality control of finished product.

serving the company's four production facilities and other parts of the Kerry Foods group. Ann Mandryk has been laboratory manager at Noon Foods since the establishment of the original testing facilities in 1992.

In the intervening years she has overseen substantial growth and development and latterly the move to new premises.

Under her direction the laboratory quickly achieved registration under the Campden

Laboratory Accreditation Scheme (CLAS), a standard recognised by all the UK's leading retailers.

"As well as CLAS we participate in two other external proficiency schemes," explained Ann. "They continually audit our activities and taken together these measures assure confidence in our results. The laboratory is accredited to carry out a wide variety of microbiology tests on many different food products and our main focus is on general quality indicators and the identification of major pathogens of concern."

All microbiology, including pathogen testing, is performed in-house, predominantly using dehydrated culture media (DCM) from Lab M.

"We have used Lab M media right from the start, as the company produces the range that we need and offers a high level of technical support.

Their current development of formulations designed to exactly meet the requirements of the new ISO standards is particularly important."

Challenges

Although it is a major producer of prepared foods, Noon Products largely manufactures

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Table 1. Microbiology – organisms tested.

SAMPLE	TVC	Coliforms	Enterobacteriaceae	Staph. aureus	Bacillus cereus	E. coli	Yeast	Mould	Listeria	Salmonella	Pseudomonas	Clostridium perfringens
Finished product												
End of life												
NPD												
Raw materials*												
Environment swabs												
Hand swabs												
Air												
Water												

* Testing carried out according to the sample type and specification.

Shaded area = tests carried out.

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under its customers' own labels, and therefore, is obliged to work to the test methods and specifications of those customers.

While there is a great deal of common ground, the laboratory has to be flexible and able to accommodate varying requirements. As well as finished product testing, the laboratory is also heavily involved in supporting the new product development teams, in checking raw materials and in environmental and hygiene monitoring for the production facilities.

With a requirement to be highly cost effective, contract testing for other companies is very much part of the workload mix.

Between 200-300 samples are processed every day and Table 1 provides some indication of the types of samples received and the organisms for which each is tested.

All in a week's work

With production at Noon Products operating six days a week, the laboratory works every day. Products made one day are despatched the next. Microbiology results are ready as the product is being released to the stores and absolutely must be available before anything can leave the supermarket's own chill area.

While limiting spoilage organisms is important, the overriding specification for prepared foods is that pathogens must be absent.



All methods are validated to appropriate standards.

The laboratory runs about 300 samples per week for listeria and, because of these high numbers, they are closely monitoring the latest ISO recommendations and looking into the use of Listeria Chromogenic Medium.

When it comes to developing new products, trials of dishes are conducted by a team of chefs. Determining shelf life is an

Showing commitment to quality and innovation

Noon Products Ltd started as a family business in 1989 with a range of just four products. Today the company manufactures more than 250 different chilled and frozen ready meals, predominantly under supermarkets' own brand ranges. Specialists in ethnic ready meals, Noon Products is a market leaders in both the chilled Indian and Thai ready meal category.

From premises of 6,000ft², Noon Products Ltd started at a time when ethnic cuisine was just beginning to emerge, with a handful of loyal colleagues who were totally committed to the venture. Many of the family and original team still remain at the heart of the Noon Products operation. The culture and ethos remains the same, with all products and production methods based on authentic and chef driven practices.

In the intervening years, Noon Products has grown at an enormous rate despite a huge set back in 1994 when a fire destroyed the original factory. Noon Products was able to recommence supply in just 21 days, bringing forward the opening of a new site. In order to meet demand for more capacity a second site was opened in 1998. A third factory began operations in 2003. In 2005, Noon Products became part of Kerry Foods, which shares Noon's values of quality and authenticity.

Noon Products currently employs in the region of 900 employees. It is with their dedication and service, combined with a strong commitment to quality and innovation, that the company has become a highly successful business.

important part of this process and once a product is accepted, the microbiological validity of its shelf life is re-checked regularly by testing retained samples.

The laboratory also has a role in raw materials testing. Daily deliveries of most ingredients are the norm and while suppliers provide QC certificates, spot checks are carried out.

Liquid egg, for example, is tested for the presence of salmonella and Staphylococcus aureus, as well as determination of total viable count (TVC); raw vegetables are examined for listeria and E. coli; and chicken for TVC, E. coli, salmonella and campylobacter. Bulk spices, drums of tomatoes and yoghurt each have their own testing regimes.

Hygiene monitoring is an essential part of the routine. Random tests around the sites indicate the presence of environmental organisms with hand swabs being used for personnel checks. Water supplies are closely monitored and settle plates indicate airborne contamination. All are processed in the microbiology laboratory.

Media selections

The range and variety of samples necessitates the use of a wide variety of culture media. "Many of the methods we use are ISO-based and validated to appropriate standards," explains Ann. "We have good media preparation facilities here and dehydrated culture media fulfils the majority of our needs. The prepared media are quality controlled following reconstitution and as plates after pouring."

An area of increasing importance for all laboratories serving the food industry are

the guidelines issued recently by the International Standards Organisation (ISO) for the preparation and production of culture media (ISO/TS 11133 Microbiology of food and animal feeding stuffs).

Part 1 of the standard was issued in 2000 and set out general guidelines on quality assurance for the preparation of culture media in the laboratory.

More recently, Part 2 has provided practical guidelines on performance testing of culture media.

Through a continuous programme of product development and new product introductions, Lab M regularly launches new formulations that specifically meet the ISO guidelines and these are being incorporated into the protocols at Noon Products.

The standards currently take the form of a detailed technical specification, setting out the minimum acceptable performance criteria and the methodology and organisms required for quality control of specific media. A typical dehydrated culture media (DCM) product is submitted to a battery of tests during manufacture.

Looking ahead

With business expanding and food safety and shelf life high on the agenda, the microbiology laboratory at Noon Products will remain as busy as ever.

Culture media are central to the operation of the laboratory. Lab M has a focus on food industry applications and the continuing development of formulations that meet the ISO requirements and looks set to play an important role.

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