Validation of a Compact Dry Plate Method for enumeration of yeasts and moulds in foods

During a Microval EN ISO 16140 validation

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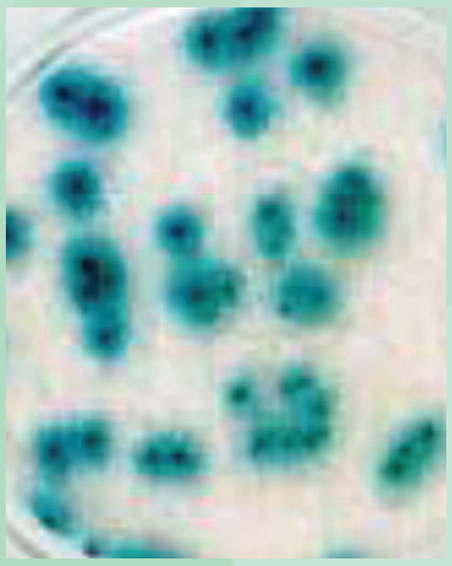


Introduction

Compact Dry (Nissui Pharmaceutical Co. Ltd; supplied by Hyserve GmbH & Co. KG) are ready-to-use dry media sheets comprising culture medium and a cold-soluble gelling agent. The Compact Dry YM (yeasts and moulds) is a ready-to-use plating medium for the enumeration of yeasts and moulds. This method is an alternative to the standard method, enabling determination of yeast and mould counts in foods after 3-7 days' incubation.

Methods

The method validation consists of a comparison study (MCS) by an expert laboratory and an inter-laboratory ring trial carried out by a number of independent laboratories (ILS). In the MCS, the Compact Dry YM method and the reference method (ISO 21527) were used to enumerate yeasts and moulds, which were either inoculated or naturally present in a range of food types. Foods tested were cooked turkey, fresh whole tomatoes, cheese, bread and mayonnaise.

The specificity of the Compact Dry YM (i.e. the ability of the method to detect target organisms) was determined using 31 yeast and mould strains for inclusivity and 20 bacterial strains for exclusivity. The ILS involved 9 laboratories in 6 countries testing inoculated orange juice samples for levels of yeasts and moulds.

The test methods used in the MCS and ILS are summarised in Figure 1.

Figure 1: Test methods

Add 10g sample to 90 ml MRD: homogenise for 1 minute

↓

Serial dilute in MRD

ISO 21527 Part 1: (products with aw>0.95)	**Compact Dry YM method**
↓	↓
Plate 0.1 ml aliquots of each dilution onto Petri dishes containing DRBC	Plate 1 ml aliquot of each dilution onto Compact Dry YM plate
↓	↓
Incubate at 25 ± 1˚C for 5 days	Incubate at 25 ± 2˚C for 3-7 days
↓	↓
Count typical yeast and mould colonies at 2 and 5 days	Count typical yeast and mould colonies (blue/green) (moulds appear cottony) at 3 and 7 days

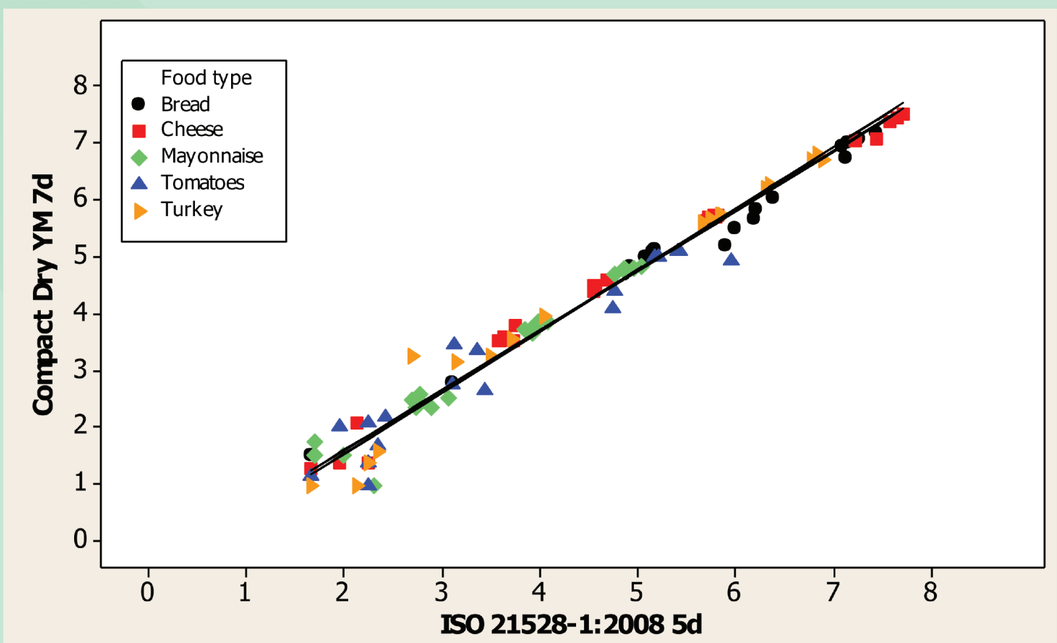
↓

Calculate cfu/g

Results

The data was analysed in accordance with the requirements of ISO 16140. The results of the MCS showed good correlation between Compact Dry YM and the ISO reference method (Figure 2).

Figure 2 Regression data for Compact Dry YM versus ISO 21527



Lines show linear regression of Compact Dry on ISO and vice versa

Two of the 31 fungal strains failed to grow on Compact Dry YM or the reference medium. These are known to be xerophilic strains and demonstrate that the method is not suitable for xerophiles. None of the non-target strains grew on Compact Dry YM whereas 5 were able to grow on the reference medium.

Results from the ILS (Table 1) showed that were there were no differences in the repeatability or reproducibility of the two methods.

Table 1 : Statistical analysis from the ILS

Level	ISO Reference Method			Compact Dry YM		
	median	Repeat-ability sd	Reproduc-ibility sd	median	Repeat-ability sd	Reproduc-ibility sd
low	4.02	0.0649	0.1153	4.000	0.1168	0.1662
medium	4.86	0.1686	0.2345	4.765	0.1168	0.2360
high	5.71	0.1038	0.2239	5.620	0.1168	0.1746

Conclusions

There were no substantial differences in the performance of the two test methods in the MCS or the ILS. The results of the validation study therefore showed the Compact Dry YM method to be equivalent to the reference method for the enumeration of yeasts and moulds in a range of foods.

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