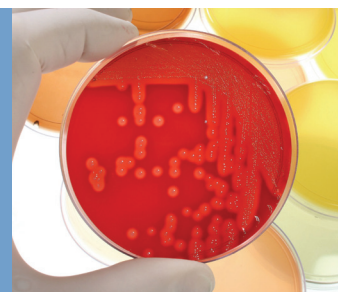


An Evaluation of Thermo Scientific PathoDextra Strep Grouping Kit



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Introduction

Beta-haemolytic streptococci may be rapidly and accurately identified according to the presence of specific cell wall antigens in a process called Lancefield Grouping¹. This process is most conveniently carried out using latex agglutination. To prepare the antigens for a latex agglutination reaction, an enzyme-mediated or nitrous acid extraction method may be used². Commercially available nitrous acid extraction kits are not traditionally capable of detecting group D antigen³.

The new PathoDextra™ Strep Grouping Kit, a latex agglutination kit from Thermo Fisher Scientific, detects groups A, B, C, D, F, and G antigen using a nitrous acid extraction method.

The aim of this study was to compare the performance of the newly developed PathoDextra Strep Grouping Kit with PathoDx™ Strep Grouping Kit, Oxoid Strep Plus Kit, Oxoid Streptococcal Grouping Kit (all from Thermo Fisher Scientific) and Prolex™ Streptococcal Grouping Latex Kit (Pro-Lab).

Methodology

A test panel of 131 beta-haemolytic streptococci was used in this study, including: Lancefield group A (n=21), B (n=27), C (n=20), D (n=23), F (n=20) and G (n=20). Thirty non-Lancefield group isolates were also tested, including: *Streptococcus pneumoniae*, *Streptococcus viridans*, *Staphylococcus aureus* and *Listeria monocytogenes*.



Figure 1: PathoDextra Strep Grouping Kit latex reagents

Isolates were cultured overnight at 37°C in air on Columbia Blood Agar (Group F streptococci required air enriched with 5% CO₂). All isolates were tested with latex reagents from each streptococcal grouping kit, according to manufacturers' guidelines.

Results were recorded according to strength of agglutination and time to first appearance of agglutination. Where discrepant results were found between kits, isolate identification was confirmed using Gram stain, catalase spot test, sensitivity to 'Optochin' Discs, PYR O.B.I.S. test (Thermo Fisher Scientific) and RapID™ STR (Thermo Fisher Scientific).

Results and discussion

All kits showed 100% accuracy in identifying all Lancefield group A and group C isolates. For the remaining isolates, PathoDextra Strep Grouping Kit performed better than or comparable to all other products examined within the study (Table 1).

The overall performance of kits that included a group D latex showed that PathoDextra Strep Grouping Kit correctly identified 150/161 (93.2%) of the isolates tested, Prolex Streptococcal Grouping Latex Kit correctly identified 148/161 (91.9%), and Oxoid Streptococcal Grouping Kit identified 149/161 (92.5%). Table 1 also includes data for kits without a group D latex, total 138 isolates.

PathoDextra Strep Grouping Kit agglutination reactions were consistently strong and exhibited a fast agglutination reaction for all Lancefield groups, providing results within 20 seconds.

Conclusions

PathoDextra Strep Grouping Kit provides rapid, clear agglutination reactions for all targeted streptococcal Lancefield groups while maintaining high accuracy. Utilizing a nitrous acid extraction, PathoDextra Strep Grouping Kit detects group D antigen and has a faster test method than enzyme extraction kits.

Overall performance of PathoDextra Strep Grouping Kit was better than or comparable to all kits examined in this study, showing it to be a reliable tool for Lancefield Grouping of streptococci.

Table 1: Number of isolates correctly identified for each Strep Grouping kit

Isolate Lancefield Group	PathoDextra Strep Grouping Kit	Prolex Streptococcal Grouping Latex Kit	PathoDx Strep Grouping Kit	Oxoid Strep Plus Kit	*Oxoid Streptococcal Grouping Kit
Total Correct					
A (n=21)	21	21	21	21	21
B (n=27)	25	25	25	24	25
C (n=20)	20	20	20	20	20
D (n=23)	21	20	[†] N/A	[†] N/A	22
F (n=20)	19	18	19	20	18
G (n=20)	19	20	20	19	18
non-groupable (n=30)	25	24	24	27	24
Total	150/161 (93.2%)	148/161 (91.9%)	129/138 (93.5%)	131/138 (94.9%)	149/161 (92.5%)

*enzyme extraction kit

[†]N/A: group D latex not included in kit

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