

Streptococcal Lancefield Grouping Using Thermo Scientific PathoDxtra Strep Grouping Kit

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Overview

Purpose: Thermo Scientific PathoDxtra™ Strep Grouping Kit (Thermo Fisher Scientific) and Prolex™ Streptococcal Grouping Latex Kit (Pro-Lab Diagnostics) were evaluated to compare the ability of the kits to accurately identify Lancefield grouped streptococci.

Methods: Three hundred and eleven Lancefield grouped streptococci were inoculated onto Columbia Horse Blood Agar (CBA) and incubated at 36±1°C overnight. Colonies were tested using PathoDxtra Strep Grouping Kit and Prolex Streptococcal Grouping Latex Kit according to manufacturer's instructions for use.

Results: Sensitivity of PathoDxtra Strep Grouping Kit when testing individual streptococcal Lancefield groups was comparable to or greater than Prolex Streptococcal Grouping Latex Kit. Overall, sensitivity of PathoDxtra Strep Grouping Kit was higher than Prolex Streptococcal Grouping Latex Kit. Specificities of PathoDxtra Strep Grouping Kit and Prolex Streptococcal Grouping Latex Kit were comparable.

Introduction

The *Streptococcus* family cause a variety of infections, ranging from strep throat, necrotizing fasciitis, impetigo, obstetric and neonatal infections through to pneumonia¹. Streptococci are classified according to haemolysis on Columbia Agar with Horse Blood (CBA). Further characterisation is performed according to the specific cell wall antigens found on beta-haemolytic streptococci, termed Lancefield grouping².

PathoDxtra™ Strep Grouping kit (Thermo Fisher Scientific) is a fast-acting latex agglutination method for the classification of clinically important streptococci. The room-temperature nitrous acid treatment instantaneously extracts any Lancefield group-specific cell antigens, which when mixed on a test slide with specific IgG-coated latex particles, give a distinct and easily recognizable granular agglutination pattern, making the test faster to use than enzyme extraction kits.

PathoDxtra Strep Grouping Kit and Prolex™ Streptococcal Grouping Latex Kit (Pro-Lab Diagnostics) were evaluated to compare the ability of the kits to accurately identify Lancefield grouped streptococci.

Methods

Three hundred and eleven Lancefield grouped streptococci (56 group A (GAS), 85 group B (GBS), 30 group C (GCS), 93 group D (GDS), 10 group F (GFS) and 37 group G (GGS) streptococci, 79 non-groupable streptococci/enterococci and 29 non-streptococci isolates (including *Staphylococcus* species) were inoculated onto CBA and incubated at 36±1°C overnight.

Colonies were tested using PathoDxtra Strep Grouping Kit and Prolex Streptococcal Grouping Latex Kit according to manufacturers' instructions for use. All isolates had previously been identified using MALDI-TOF mass spectrometry and sodA sequencing.

Results

Overall, sensitivity of PathoDxtra Strep Grouping Kit was greater than that of Prolex Streptococcal Grouping Latex Kit. Sensitivity of PathoDxtra Strep Grouping Kit when testing individual streptococcal Lancefield groups was comparable to or greater than that of Prolex Streptococcal Grouping Latex Kit (see table 1). Specificity of PathoDxtra Strep Grouping Kit was comparable to that of Prolex Streptococcal Grouping Latex Kit (97.8% and 97.5% respectively).

Group reagent	PathoDxtra Strep Grouping Kit	Prolex Streptococcal Grouping Latex Kit
A (n = 56)	100 (95% CI = 100%)	98.2 (95% CI = 94.7-100%)
B (n = 85)	96.5 (95% CI = 92.6-100%)	97.6 (95% CI = 94.3-100%)
C (n = 30)	100 (95% CI = 100%)	86.7 (95% CI = 74.5-98.9%)
D (n = 93)	66.7 (95% CI = 57.1-76.3%)	59.1 (95% CI = 49.1-69.1%)
F (n = 10)	100 (95% CI = 100%)	90 (95% CI = 71.4-100%)
G (n = 37)	100 (95% CI = 100%)	100 (95% CI = 100%)
overall (n = 311)	89.1 (95% CI = 85.6-92.6%)	85.2 (95% CI = 81.3-89.1%)

TABLE 1. Sensitivity (%) of PathoDxtra Strep Grouping Kit and Prolex Streptococcal Grouping Latex Kit for detecting Lancefield grouped streptococci

Conclusion

Overall, performance of PathoDxtra Strep Grouping Kit was better than that of Prolex Streptococcal Grouping Latex Kit, especially in detection of GCS and GDS. PathoDxtra Strep Grouping Kit showed fewer cross reactions from both Lancefield groupable and non-groupable streptococci isolates compared to Prolex Streptococcal Grouping Latex Kit. Incorporating a vivid blue latex, PathoDxtra Strep Grouping Kit gave clear, easily readable agglutination reactions within 60 secs

References

- Centers for Disease Control and Prevention (CDC). www.cdc.gov
- Facklam, R. (2002). "What happened to the streptococci: overview of taxonomic and nomenclature changes". *Clin Microbiol Rev* 15 (4): 613–30

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FIGURE 1. Thermo Scientific PathoDxtra Strep Grouping Kit