

# Thermo Scientific PathoDxtra Strep Grouping Kit Shows Superior Performance Over Prolex Streptococcal Grouping Latex Kit

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## Overview

**Purpose:** The purpose of this study was to evaluate the performance of the Thermo Scientific™ PathoDxtra™ Strep Grouping kit (Thermo Fisher Scientific) alongside the Prolex™ Streptococcal Grouping Latex kit (Pro-Lab Diagnostics) for identifying Lancefield Groups.

**Methods:** 265 Lancefield group isolates (A, B, C, D, F, G) and 30 ungroupable streptococci were tested with the acid extraction method on both the PathoDxtra Strep Grouping kit and the Prolex™ Streptococcal Grouping Latex kit. In addition, the PathoDxtra Strep Grouping kit was tested using the direct testing method and broth enrichment method.

**Results:** The PathoDxtra Strep Grouping kit showed a superior performance compared to the Prolex™ Streptococcal Grouping Latex kit for the acid extraction method. The PathoDxtra Strep Grouping kit maintained a high inclusivity performance with the direct testing and broth culture methods.

## Introduction

Streptococci are classified according to haemolysis on Columbia Blood Agar (CBA). Further characterisation is performed according to the specific cell wall antigens found on beta-haemolytic streptococci, termed Lancefield grouping<sup>1</sup>.

The PathoDxtra Strep Grouping kit (figure 1) and the Prolex™ Streptococcal Grouping Latex kit are both latex agglutination methods for the classification of clinically important streptococci. The nitrous acid extraction instantaneously extracts the cell antigens and works without the need for incubation, allowing accurate differentiation of all the clinically significant Lancefield Groups: A, B, C, D, F and G.

**Figure 1. Thermo Scientific PathoDxtra Strep Grouping Kit**



## Methods

**Sample Preparation:** A total of 208 streptococcal Lancefield group isolates (51 group A, 50 group B, 50 group C, 10 group F, 47 group G), 57 enterococci (Lancefield group D) and 30 ungroupable streptococci (including *S. pneumoniae*, *S. anginosus* and *S. oralis*) were cultured onto CBA and incubated at 36±1°C for 18-24 hr.

**Test methods:** The PathoDxtra Strep Grouping kit was tested using three separate methods (acid extraction, direct testing and broth culture) following manufacturer's guidelines. The Prolex™ Streptococcal Grouping Latex kit was tested using only the acid extraction method as this is the only method provided by manufacturer of the Prolex™ Streptococcal Grouping Latex kit.

**Data analysis:** The time (in seconds) at which an agglutination reaction was observed, plus presence and strength of agglutination at 60 seconds from any of the latexes from each of the streptococcal grouping kit tests were recorded. Exclusivity has been calculated based on the number of cross reactions (i.e. false positive reactions) seen on the Lancefield grouped streptococci and ungroupable streptococci tested.

## Results

**Table 1. Inclusivity of the PathoDxtra Strep Grouping kit and the Prolex™ Streptococcal Grouping Latex kit**

Lancefield group reagent	Inclusivity (%)			
	PathoDxtra Strep Grouping kit			Prolex™ Streptococcal Grouping Latex kit
	Acid extraction	Direct testing	Broth culture	Acid extraction
A (n = 51)	96.1	70.6	82.4	92.2
B (n = 50)	94.0	94.0	98.0	72.0
C (n = 50)	88.2	62.8	94.1	62.8
D (n = 57)	73.7	98.3	96.5	42.1
F (n = 10)	90.0	30.0	50.0	30.0
G (n = 47)	93.6	66.0	83.0	59.6
Total (n = 265)	88.7	77.1	89.5	63.9

When using the acid extraction method, the PathoDxtra Strep Grouping kit showed a superior inclusivity to that of the Prolex™ Streptococcal Grouping Latex kit for all individual *and* overall Lancefield groups.

The additional broth culture method used with the PathoDxtra Strep Grouping kit gave a comparable overall inclusivity performance to the acid extraction method.

The additional direct testing method used with the PathoDxtra Strep Grouping kit gave a slightly reduced overall inclusivity in comparison to the acid extraction method and broth culture method. However, the direct testing inclusivity is higher or equal to that of the Prolex™ Streptococcal Grouping Latex kit when using the acid extraction method.

The exclusivity of both kits had a comparable performance when using the acid extraction method (all 100%). The acid extraction and direct testing methods showed comparable exclusivity for the PathoDxtra Strep Grouping kit (all 100%). The broth culture method showed a slightly reduced overall exclusivity (99.9%) compared to the other two methods (all 100%) when using the PathoDxtra Strep Grouping kit.

## Conclusion

- PathoDxtra Strep Grouping kit offers an additional two methods for use; direct testing method and broth culture method.
- When using the acid extraction method, the PathoDxtra Strep Grouping kit showed a superior inclusivity to that of the Prolex™ Streptococcal Grouping Latex kit.
- The PathoDxtra Strep Grouping kit maintained a superior overall inclusivity performance throughout all three methods used when compared to the Prolex™ Streptococcal Grouping Latex kit acid extraction overall inclusivity.

## References

1. 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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