

## Serotype distribution and antibiotic susceptibility of *Streptococcus pneumoniae* among healthy children in selected MOH areas in the Colombo district

GDMC Gonapaladeniya<sup>1</sup>, GSH Liyanage<sup>2</sup>, MM Weerasekara<sup>1</sup>, SN Jayakody<sup>3</sup>,  
MHM Wickramasekara<sup>4</sup>, DMBT Dissanayake<sup>1</sup>

**Introduction and Objectives:** *Streptococcus pneumoniae* is a major pathogen, infecting humans worldwide, especially children. Colonisation by *S. pneumoniae* is known to be a prerequisite for invasive disease. This study aimed to analyse the serotype distribution and antibiotic susceptibility patterns of *S. pneumoniae* in vaccine-naïve healthy children in the Colombo district.

**Methods:** Nasopharyngeal swabs were collected from 350 healthy children aged 2-24 months from April to August 2021, using an age-appropriate nylon-tipped flocked swab. The swabs were placed in vials with STGG medium, immediately transported at room temperature and stored at -80 °C until culture on sheep blood agar. *S. pneumoniae* isolates were confirmed by a conventional PCR using *lytA* gene. Antibiotic susceptibility was determined by the disc diffusion method and minimum inhibitory concentration using the e-strip method according to the CLSI guidelines. The confirmed *S. pneumoniae* isolates underwent a modified two-step PCR assay (Marmaras *et al.*, 2021) followed by capsular sequence typing to detect the serotypes.

**Results:** The age of the children ranged between 2 -24 months. The male: female ratio of the population was 1.06:1. The pneumococcal colonisation rate was 5.7% (20/350). The most predominant serotype was 19F (n = 9, 45.0%) and the rest were serotypes 3 (n=3, 15.0%), 9N/9L (n=3, 15.0%), 6B (n=2, 10.0%), 6A/6B (n=2, 10.0%) and 17A/17F/35B/35C/33C (n=1, 5.0%). Of the 20 isolates, 80.0% are serotypes included in the pneumococcal conjugate vaccine (PCV) 13 and 55.0% in PCV10. PCV10 coverage was inconclusive in 2 isolates. The isolates were 100% resistant to penicillin at meningitis breakpoints while 30% sensitive and 70% intermediate sensitive at non-meningitis breakpoints. All isolates (100%) were sensitive to cefotaxime at non-meningitis breakpoints while 85% sensitive and 15% intermediate sensitive at meningitis breakpoints.

**Conclusion:** The pneumococcal colonisation rate is low (5.7%) in the study group of healthy children compared to previous reports. Serotype 19F is the commonest and PCV 13 covers 80.0% of the serotypes. *S. pneumoniae* demonstrates low sensitivity to penicillin at both meningeal and non-meningeal breakpoints.

**Keywords:** *Streptococcus pneumoniae*, serotypes, antibiotic susceptibility

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<sup>1</sup>Department of Microbiology, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka

<sup>2</sup>Department of Paediatrics, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka

<sup>3</sup>Department of Community Medicine, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka

<sup>4</sup>Department of Medical Education, Faculty of Medicine, University of Kelaniya, Sri Lanka

Address for correspondence: Dr. Thushari Dissanayake, Department of Microbiology, Faculty of Medical Sciences, University of Sri Jayewardenepura. Telephone: +94112758672; Email: [dissanayakethushari@sjp.ac.lk](mailto:dissanayakethushari@sjp.ac.lk)

 <https://orcid.org/0000-0002-2843-9651>