

Título: DISTRIBUTION OF *pspA* AND PILUS TYPE 1 GENES AMONG *Streptococcus pneumoniae* STRAINS ISOLATED BETWEEN 1988 AND 2012 IN BRAZIL

Autores: Pinto, T.C.A., Costa, N.S., Pina, S.E.C.M., Rocha, F.S.P, Morais, J.M., Souza, A.R.V., Teixeira, L.M.

Instituição: Instituto de Microbiologia Paulo de Góes, Universidade Federal do Rio de Janeiro, RJ, Brazil (Avenida Carlos Chagas Filho, 373 bloco I, Cidade Universitária)

Resumo:

Streptococcus pneumoniae is a leading cause of vaccine-preventable infections. The polysaccharide capsule is its major virulence factor and constitutes the basis for currently licensed vaccines. In Brazil, the 10-valent pneumococcal conjugate vaccine (PCV10) has been available since 2010. In addition, surface proteins such as PspA and pilus type 1 (PI-1) have more recently been evaluated as novel serotype-independent vaccine targets, but data on the prevalence and diversity of such proteins in our country are still lacking. Therefore, in the present study, the presence of *pspA* and PI-1 genes were evaluated among 338 pneumococcal strains belonging to 22 different serotypes and recovered from different clinical specimens between 1988 and 2012 in Brazil. All isolates had *pspA* genes; 35% and 64% of the strains presented, respectively, *pspA* genes of families 1 (mostly clade 1) and 2 (mostly clade 3). The rarely reported family 3 gene (all of them clade 6) was detected in 1% of the strains, being all of them non-typeable, penicillin susceptible and recovered from asymptomatic nasopharyngeal colonization (ANC). *pspA* genes of family 2 were the most common among isolates belonging to both PCV10 serotypes (64%) and non-PCV10 serotypes (67%), as well as they were the most prevalent among isolates from both invasive pneumococcal disease (IPD; 64%) and ANC (67%). *pspA* genes of family 2 were also highly prevalent among penicillin non-susceptible pneumococci (PNSP; 88%), while family 1 genes were more common among penicillin susceptible pneumococcal isolates (PSP; 53%). A total of 43.2% of the strains also harbored PI-1 genes. PI-1 genes were commonly found among PNSP strains (73%), isolates belonging to PCV10 serotypes (52%), strains recovered from IPD (44%) and from ANC (40%); but were more rarely detected among PSP strains (23%) and isolates belonging to non-PCV10 serotypes (5%). PI-1 genes were also more common among isolates presenting *pspA* genes of family 2 (62%) when compared to family 1 (9%), while no isolate of family 3 had PI-1 genes. Occurrence of strains harboring PI-1 genes has been increasing along the years, while prevalence of isolates presenting *pspA* genes of family 1 has been decreasing. Our results show that *pspA* genes of family 2 and PI-1 genes are highly prevalent and have been increasingly detected among pneumococcal strains isolated in Brazil since the late 80's, being especially associated with PCV10 serotypes and non-susceptibility to penicillin.

Palavras-chave: *Streptococcus pneumoniae*, *pspA* genes, pilus type 1