Analisis Spesifisitas dan Sensitivitas Antibodi Poliklonal Anti PCV13 terhadap Kapsul Polisakarida Streptococcus pneumoniae dan S. agalactiae untuk Pengembangan Uji Immunodiagnostik Pada Infeksi Sistem Saraf Pusat = Specificity and Sensitivity Analysis of Anti PCV13 Polyclonal Antibody to Streptococcus pneumoniae and S. agalactiae Polysaccharide Capsules for the Development of Immunodiagnostic Tests in Central Nervous System Infections

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Abstrak

Infeksi sistem saraf pusat diantaranya dapat disebabkan oleh S. pneumoniae dan S. agalactiae. Serotipe dari kedua bakteri tersebut dibedakan berdasarkan kapsul polisakaridanya yang merupakan faktor virulensi dominan ketika menginfeksi. Penelitian ini bertujuan untuk menganalisis spesifisitas dan sensitivitas antibodi poliklonal anti-vaksin konjugat pneumokokus 13-valen (PCV13) terhadap kapsul polisakarida S. pneumoniae dan S. agalactiae untuk pengembangan uji immunodiagnostik pada infeksi sistem saraf pusat. Pada penelitian ini dilakukan produksi antibodi poliklonal anti-kapsul PCV13 pada kelinci, isolasi kapsul polisakarida dari S. pneumoniae serotipe 6B dan 19F isolat Indonesia juga S. agalactiae serotipe II untuk melihat reaksi silang antar spesies. Metode indirect ELISA, multipleks PCR, purifikasi kapsul, dan western blot dilakukan dalam penelitian ini. Antibodi anti-kapsul PCV13 antara kelompok kontrol dan uji memiliki perbedaan bermakna terhadap kapsul polisakarida S. pneumoniae serotipe 6B dan 19F. Sensitivitas tertinggi antara kapsul S. pneumoniae standar dan hasil isolasi yaitu pada serotipe 6B sebesar 88% dengan spesifisitas 67%. Namun, S.agalactiae menunjukkan nilai spesifisitas yang cukup tinggi juga dengan S.pneumoniae 6B sebesar 80%. Hal tersebut dikonfirmasi juga berdasarkan hasil western blot yang menunjukkan adanya pita pada tiga kapsul polisakarida hasil isolasi tersebut. Sehingga hasil penelitian menunjukkan adanya reaksi silang pada antibodi poliklonal anti-PCV13 terhadap S. agalactiae serotipe II.

.....Central nervous system infections can be caused by S. pneumoniae and S.agalactiae. The serotypes of the two bacteria are differentiated based on their polysaccharide capsule which is the dominant virulence factor when infecting. This study aims to analyze the specificity and sensitivity of the anti-capsule polyclonal antibody of the 13-valent pneumococcal conjugate vaccine (PCV13) against the polysaccharide capsules of S.pneumoniae and S.agalactiae for the development of an immunodiagnostic test in central nervous system infections. In this research, the production of anti-PCV13 polyclonal antibodies was carried out in rabbits, isolation of polysaccharide capsules from Indonesian isolates S. pneumoniae serotypes 6B and 19F, and S. agalactiae serotype II to observe cross-reactions between species. Indirect ELISA, capsule purification, and western blot methods were performed in this study. The anti-capsule PCV13 antibodies between control and test groups had significant differences against polysaccharide capsules of S. pneumoniae serotypes 6B and 19F. The highest sensitivity between standard S. pneumoniae capsule and isolated results was serotype 6B of 88% with a specificity of 67%. However, S.agalactiae also showed a high specificity value with S.pneumoniae 6B of 80%. So the results of the study showed that there was a cross-reaction of the anti-PCV13 polyclonal antibody against S.agalactiae serotype II.