

VAC_10 - Characterization of the *oatC* gene of *Neisseria meningitidis* serogroup C from 1991 to 2019

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Introduction: Meningococcal disease (MD) is caused by the bacterium *Neisseria meningitidis*, an exclusively human pathogen classified into different serogroups, with A, B, C, Y, W and X being the most associated with epidemic outbreaks around the world. Features such as a rapid progression of the disease combined with a high lethality rate, ranging from 7% to 70% of untreated cases, associated with physical or neurological sequelae after treatment, in up to 20% of cases, demonstrates the importance of the surveillance, prophylaxis and treatment methods for this disease. It is estimated that in Brazil, an endemic region, MD is responsible for a lethality of 21.9%. Currently there are vaccines against different serogroups of *Neisseria meningitidis*, however, studies indicate that a vaccine developed from de-O-acetylated (*oatC*-) strains against serogroup C confer IgG levels twice higher and a bactericidal effect more pronounced than vaccines produced from O-acetylated lineages (*oatC*+).

Objective: To evaluate the evolution of the *oatC* gene responsible for the acetylation of the capsular polysaccharide of *Neisseria meningitidis* serogroup C of Brazilian isolates from 1991 to 2019, to determine the proportion of *oatC*+ and *oatC*- circulating strains in the country.

Methodology: With this purpose, a selection of the strains deposited in the Collection of Reference Bacteria in Sanitary Surveillance (CBRVS) was performed. These strains were characterized by molecular methods and sequencing of the *oatC* gene for classification into *oatC*+ or *oatC*- by comparison of deduced amino acid sequences with reference strains for each capsular type.

Results: The study showed that the proportion of *oatC*- circulating strains was 23%, well above the average of 13.5% found in the United Kingdom and United States, the only countries where this type of study has ever been conducted.

Conclusion: It was concluded that the introduction of a conjugated serogroup C vaccine produced from *oatC*- strains could bring benefits to the sensitive population.

Keywords: Meningococcal Disease; Acetylated Polysaccharides; Vaccines