Nasal immunization in rabbits with *Neisseria lactamica*: the importance of the cross reactive antigens


*Neisseria lactamica*, a commensal bacterium non-pathogenic to human beings and usually found in the upper respiratory tract of children, is closely related to pathogenic *Neisseria meningitidis*. Colonization with *N. lactamica* can be responsible for evolving natural immunity to meningococcal infection in childhood, when rates of meningococcus carriers are low. These features lead to suggest that *N. lactamica* components can be key-elements in the production of a new vaccine for *N. meningitidis*. As little is known about dynamic carriers and *N. lactamica* population diversity in children, it has been difficult choosing a representative for preparing an adequate immunogenic product. A protocol was proposed to study immunogenicity of whole cells of *N. lactamica*, *N. meningitidis*, *N. sicca* or *N. meningitidis c* (carrier-isolated) by i.n. immunization in rabbits considering the natural pathogen entry route. Oropharinx-isolated *N. lactamica*, *N. meningitidis*, *N. sicca*, or *N. meningitidis c* were i.n. inoculated into adult rabbits, in a concentration of optical density 1.0 at 650nm in a volume of 1000 µL. The rabbits were immunized four times at seven-day intervals. *N. subflava*, *N. elongata*, *N. sicca*, *N. perflava*, *N. mucosa* strains isolated from CSF and blood were also used. The rabbits developed levels of specific IgG antibodies in serum, as determined by ELISA using whole cells of homologous and heterologous strains. Serum from rabbits immunized with *N. lactamica*, *N. meningitidis*, and *N. sicca* or *N. meningitidis c*, presented IgG antibodies reactive to 5 to 130 kDa antigens on immunoblot. Antibodies in serum from rabbits immunized with *N. lactamica* failed to induce high concentration of antibodies with bactericidal activity against *N. meningitidis*; however, this activity could be observed with antibodies produced by rabbits i.n. immunized with *N. meningitidis*. High avidity IgG antibodies were produced, although a significant correlation between bactericidal activity and induction of IgG antibodies of high avidity could not be determined, mainly in rabbits immunized with *N. lactamica*. Intranasal immunization of *N. lactamica* whole cells was suitable to efficiently sensitize mucosal immune system in rabbit model.

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