

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

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*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. Oropharynx-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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