

Product Specification Sheet

**Meningitis B neisserial Neisseria adhesin A (Men B NADA) Positive and negative Controls**

<input type="checkbox"/> MBNA21-HPC	Meningitis B neisserial Neisseria adhesin A (Men B NADA) <b>positive control serum</b>	<b>Size:2 ml</b>
<input type="checkbox"/> MBNA21-HNC	Meningitis B neisserial Neisseria adhesin A (Men B NADA) <b>negative control serum</b>	<b>Size:2 ml</b>

**Meningococcal meningitis**, a form of meningococcal disease, is a serious bacterial infection. It causes meningitis, meningococemia, septicemia, and rarely carditis, septic arthritis, or pneumonia. Unlike viral meningitis, it can potentially kill an otherwise healthy young person within a few days after the first symptoms appear. Meningitis is inflammation of the protective membranes covering the brain and spinal cord, known collectively as the meninges. It is life-threatening because of the inflammation's proximity to the brain and spinal cord; therefore the condition is classified as a medical emergency. *Neisseria meningitidis* has 13 clinically significant serogroups, classified according to the antigenic structure of their polysaccharide capsule. Six serogroups, **A, B, C, Y, W135 and X** are responsible for virtually all cases of the disease in humans.

The capsular polysaccharide of Men B is a self antigen that cannot be used to make a vaccine. The antigens selected by reverse vaccinology were prioritized based on their ability to induce broad protection. The proteins that met these criteria were called **Genome-derived Neisseria Antigens**. The most abundant antigen is **PorA**, which is variable and induces only strain-specific protection. Less abundant but more conserved antigens are **FHBP (factor H-binding protein) NadA (Neisseria adhesin A) and NHBA (Neisseria heparin-binding antigen)**.

**FHBP** (or **GNA1870**, 282 a.a.) is a surface exposed lipoprotein that binds human factor H, enhancing the ability of the bacterium to resist complement-mediated killing. It is classified into 3 genetic and immunogenic variants: NADA-1, NADA-2 and NADA-3, which are not cross-protective, and can be further divided into sub variants NADA-1.x, NADA-2.x and NADA-3.x. **NadA** (or **GNA1994**, 362 a.a) is an adhesin that was included in the MenB vaccine as single trimeric soluble protein, devoid of the membrane anchor domain. NadA is well conserved, and five variants have been identified. NadA-1, NadA-2, and NadA-3 show highly conserved sequences. NadA-4 and NadA-5 are less common, and associated with carrier strains. **NHBA** (or **GNA2132**, 427 a.a) is a surface-exposed lipoprotein which binds heparin in vitro through an arginine-rich region. The NHBA domain fold consists of an 8-strand  $\beta$ -barrel that closely resembles the C-terminal domains of *N. meningitidis* factor H-binding protein and transferrin-binding protein B. This common fold together with more subtle structural similarities suggest a common ancestor for these important antigens and a role of the  $\beta$ -barrel fold in inducing immunogenicity against *N. meningitidis*.

A multi component vaccine against serogroup B meningitis **Bexsero® (4CMenB)**, has just completed phase III clinical trials in infants. There are currently 3 vaccines available in the US, all quadrivalent in nature, targeting serogroups A, C, W-135 and Y. Two conjugate vaccines (**MCV-4**), **Menactra** (Polysaccharides conjugated to Diphtheria Toxoid) and **Menveo** (Conjugated to toxoid diphtheria mutant CRM197); One polysaccharide vaccine (**MPSV-4**), **Menomune**, produced by Sanofi Pasteur; **Mencevax** (GlaxoSmithKline, CRM197 conjugate) and **NmVac4-A/C/Y/W-135** (JN-International Medical Corporation, conjugated to Diphtheria Toxoid) are used worldwide, but have not been licensed in the United States.

**Source and Forms of Controls**

Human Men B NADA protein antibody controls were prepared from human sera that were infected with the Men B virus or had antibodies due to natural infection. The controls are tested in ELISA using purified MenB NADA protein coated plates.

**Cat# MBNA21-HNC; MenB NADA antibody –ve control**

Human serum in a stabilizing buffer supplied as liquid (2 ml) or in lyophilized form. Reconstitute powder with 2 ml distilled water. When tested undiluted the –ve control yielded Men B NADA antibody ELISA # **600-900-HNG**, A450=<0.400. For testing in other ELISAs or applications, users must determine the sample dilutions.

**Cat# MBNA21-HPC; MenB NADA antibody +ve control**

Human serum in a stabilizing buffer supplied as liquid (2 ml) or in lyophilized form. Reconstitute powder with 2 ml distilled water. When tested undiluted the +v control yielded. Men B NADA antibody ELISA # **600-900-HNG** A450=>1.500. For testing in other ELISAs or applications, users must determine the sample dilutions.

**Store** –ve or +ve controls at 4°C for 1-3 months or store frozen at -20°C in suitable size aliquots.

**Stability:** 6-12 months at –20°C or below.

**Shipping:** 4°C for solutions and room temp for powder.

**References:** Veronica E (2011) J Biol Chem 286: 41767-41775; David M. Vu (2011) Vaccine 29: 1968–1973. Miguel O (2014) Drugs ;74: 15–30.; Seil KL (2009) Infect Immun. 77(1): 292–299. Masignani (2003) JEM 197 (6): 789

\*This product is for In vitro research use only.

**Related material available from ADI**

FHBP11-C	Purified Meningitis B factor H binding protein (MenB fHbp) control for western blot	
FHBP11-NC	Human Meningitis B factor H binding protein (MenB fHbp) antibody negative control serum	
FHBP11-PC	Human Meningitis B factor H binding protein (MenB fHbp) antibody positive control serum	
FHBP11-S	Rabbit Anti-Meningitis B factor H binding protein (MenB fHbp) antiserum	
FHBP15-R-10	Recombinant (E.coli, his tag) Purified Meningitis B factor H binding protein (MenB fHbp) (>95%)	
NADA11-S	Anti-Meningitis B neisserial adhesin A (MenB Nad A) antiserum	
NADA15-R-10	Recombinant (E.coli, his tag) Purified Meningitis B neisserial adhesin A (MenB NadA) protein (>95%)	
NHBA11-C	Purified Meningitis B neisserial heparin-binding antigen (MenB NHBA) control for western blot	
NHBA11-NC	Human Meningitis B neisserial heparin-binding antigen (MenB NHBA) antibody positive control serum	
NHBA11-PC	Human Meningitis B neisserial heparin-binding antigen (MenB NHBA) antibody positive control serum	
NHBA11-S	Rabbit Anti-Meningitis B neisserial heparin-binding (MenB NHBA) antigen antiserum	
NHBA15-R-10	Recombinant (E.coli, his tag) Purified Meningitis B neisserial heparin-binding antigen (MenB NHBA) (>95%)	
MBNA21-HPC-MenB-NadA		151124SV