

Product Specification Sheet

Meningitis B factor H binding protein (MenB fHbp) Positive and negative Controls

□ MBFH11-HPC	Meningitis B factor H binding protein (MenB fHbp) positive control serum	Size:2 ml
□ MBFH11-HNC	Meningitis B factor H binding protein (MenB fHbp) negative control serum	Size:2 ml

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)** FHBP (*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: FHBP-1, FHBP-2 and FHBP-3, which are not cross-protective, and can be further divided into sub variants FHBP-1.x, FHBP-2.x and FHBP-3.x. FHBP (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. FHBP is well conserved, and five variants have been identified. FHBP-1, FHBP-2, and FHBP-3 show highly conserved sequences. FHBP-4 and FHBP-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 β-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 β-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 FHBP 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 FHBP protein coated plates.

Cat# MBFH11-HNC; MenB FHBP 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 FHBP antibody ELISA # **600-910-HFG** A450=<0.400. For testing in other ELISAs or applications, users must determine the sample dilutions.

Cat#MBFH11-HPC; MenB FHBP 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 fHbp antibody ELISA # **600-910-HFG** 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

Catalog#	Prod Description
MBFH11-HNC	Human Meningitis B factor H binding protein (MenB fHbp) antibody negative control serum
MBFH11-HPC	Human Meningitis B factor H binding protein (MenB fHbp) antibody positive control serum
MBFH15-R-10	Recombinant (E.coli) Meningitis B factor H binding protein (his tag, 35 kDa) purified
MBNA21-C	Recombinant Meningitis B Neisserial adhesin A (MenB Nad A) protein control for western blot
MBNA21-HNC	Human Meningitis B neisserial adhesin A (MenB Nad A)antibody negative control serum
MBNA21-HPC	Human Meningitis B neisserial adhesin A (MenB Nad A) antibody positive control serum
MBNA21-S	Anti-Meningitis B Neisserial adhesin A (MenB Nad A) antiserum
MBNA25-R-10	Recombinant (E.coli) Meningitis B Neisserial adhesin A (MenB NadA) protein (his tag, 36 kDa) purified
MBNH31-C	Recombinant Meningitis B Neisserial Heparin-Binding Antigen (MenB NHBA) protein control for western blot
MBNH31-HNC	Human Meningitis B neisserial heparin-binding antigen (MenB NHBA) antibody positive control serum
MBNH31-HPC	Human Meningitis B neisserial heparin-binding antigen (MenB NHBA) antibody positive control serum
MBNH31-S	Anti-Meningitis B Neisserial Heparin-Binding Antigen (MenB NHBA) antiserum
MBNH35-R-10	Recombinant (E.coli) Meningitis B neisserial adhesin A (MenB NadA) protein (his tag, 43 kDa.) purified
600-950-H4G	Human Anti-Meningitis B antigens (PorA+NADA+fHbp+NHBA) combo IgG ELISA kit, 96 tests
600-955-M4G	Mouse Anti-Meningitis B antigens (Por A+NADA +fHbp+ NHBA) combo IgG ELISA kit, 96 tests
600-900-HNG	Human Anti-Meningitis B Neisserial adhesin A (NadA) IgG ELISA kit, 96 tests
600-905-MNG	Mouse Anti-Meningitis B Neisserial adhesin A (NadA) IgG ELISA kit, 96 tests

MBFH11-HPC-MenB-FactorH 151124SV