

Recombinant Hepatitis B Virus E Antigen (HBeAg)

Cat. No. HEP-243 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Hepatitis B virus e antigen (HBeAg) expressed in *E. coli*.

Background

HBV is an enveloped DNA virus with a 3.2-kb covalently closed circular DNA, which replicates within the nucleus of infected hepatocytes (Seeger & Mason, 2015). Four genes are present on the virus genome; pre-core/core, polymerase (P), envelope (pre-S1/pre-S2/S) and X. The pre-core/core gene is responsible for expression of core protein as well as Hepatitis B e antigen (HBeAg), a serological marker of HBV infection correlating with high viral load.

The 5' end of pre-S1, pre-S2 and S regions all have independent start codons which can each generate three co-terminal envelope proteins called large (L; pre-S1 pre-S2 S), middle (M; pre-S2 S), and small (S; with S domain alone) envelope proteins. The S protein is the most abundant envelope protein expressed and can be secreted independently of L and M envelope proteins. After secretion, mature HBeAg is deleted at residue 149 C-terminally and retains 10 pre-core residues N-terminally. Both L and S envelope proteins are needed for virion secretion, while M protein is dispensable (Bruss & Ganem, 1991; Ueda, et al., 1991).

Core particles with mature (double stranded DNA) genome can be enveloped and released as 42-nm virions, with the three envelope proteins inserted on the surface. Empty viral particles (22-nm) are also abundantly produced (Bruss & Ganem, 1991; Ganem & Prince, 2004; Zhang & Tang, 2017).

The exact function of this non-structural protein is unknown. HBeAg is dispensable for replication, as mutant viruses with defects in the pre-C region are both infectious and pathogenic (Mandell, et al., 2009). However, it is thought that HBe may be influential

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in suppressing the immune systems response to HBV infection by down-regulating Toll-like receptor 2 expression on hepatocytes and monocytes leading to a decrease in cytokine expression. The presence of HBeAg in patient serum can serve as a marker of active replication in chronic hepatitis.

Purity 95% by SDS-PAG

Formulation 25mM Tris-HCl, pH 8.0, 1.5 M urea, 50% glycerol.

Notes This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.

Type Recombinant

ClassID 1 Infectious Disease

GENE INFORMATION

Synonyms HBeAg

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