Endonuclease V

Description: Endonuclease V is a repair enzyme found in E. coli that recognizes deoxyinosine, a deamination product of deoxyadenosine in DNA. Endonuclease V, often called deoxyinosine 3’ endonuclease, recognizes DNA containing deoxyinosines (paired or not) on double-stranded DNA, single-stranded DNA with deoxyinosines and to a lesser degree, DNA containing abasic sites (ap) or urea, base mismatches, insertion/deletion mismatches, hairpin or unpaired loops, flaps and pseudo-Y structures. It is believed that Endonuclease V needs another protein to repair the DNA, as it does not remove the deoxyinosine or the damaged bases (1,2,3).

Endonuclease V cleaves the second phosphodiester bond 3’ to the mismatch of deoxyinosine (2), leaving a nick with 3’-hydroxyl and 5’-phosphate (4).

Source: An E. coli strain containing a gene fusion of the Endo V gene and the gene coding for the maltose binding protein (MBP). The fusion protein is purified to near homogeneity and is active as a fusion. The protein contains 223 amino acids and has a molecular weight of 24.9 kDa (5).

Applications:
- Mismatch Cleavage
- Cleavage of oligonucleotides containing deoxyinosine and a weaker affinity for oligonucleotides containing base mismatches (5)

Supplied in: 250 mM NaCl, 10 mM Tris-HCl (pH 7.4 @ 25°C), 0.1 mM EDTA, 1 mM dithiothreitol, 0.15% Triton X-100, 200 µg/ml BSA and 50% glycerol.

Endonuclease V

Description: Endonuclease V is a repair enzyme found in E. coli that recognizes deoxyinosine, a deamination product of deoxyadenosine in DNA. Endonuclease V, often called deoxyinosine 3’ endonuclease, recognizes DNA containing deoxyinosines (paired or not) on double-stranded DNA, single-stranded DNA with deoxyinosines and to a lesser degree, DNA containing abasic sites (ap) or urea, base mismatches, insertion/deletion mismatches, hairpin or unpaired loops, flaps and pseudo-Y structures. It is believed that Endonuclease V needs another protein to repair the DNA, as it does not remove the deoxyinosine or the damaged bases (1,2,3).

Endonuclease V cleaves the second phosphodiester bond 3’ to the mismatch of deoxyinosine (2), leaving a nick with 3’-hydroxyl and 5’-phosphate (4).

Source: An E. coli strain containing a gene fusion of the Endo V gene and the gene coding for the maltose binding protein (MBP). The fusion protein is purified to near homogeneity and is active as a fusion. The protein contains 223 amino acids and has a molecular weight of 24.9 kDa (5).

Applications:
- Mismatch Cleavage
- Cleavage of oligonucleotides containing deoxyinosine and a weaker affinity for oligonucleotides containing base mismatches (5)

Supplied in: 250 mM NaCl, 10 mM Tris-HCl (pH 7.4 @ 25°C), 0.1 mM EDTA, 1 mM dithiothreitol, 0.15% Triton X-100, 200 µg/ml BSA and 50% glycerol.

Reagents Supplied with Enzyme: 10X NEBuffer 4.

Reaction Conditions: 1X NEBuffer 4. Incubate at 37°C.

1X NEBuffer 4: 50 mM potassium acetate 20 mM Tris-acetate 10 mM magnesium acetate 1 mM DTT pH 7.9 @ 25°C

When using a buffer other than the optimal (supplied) NEBuffer, it may be necessary to add more enzyme to achieve complete digestion.

Unit Definition: One unit is defined as the amount of enzyme required to cleave 1 pmol of a 34 mer oligonucleotide duplex containing a single deoxyinosine site in a total reaction volume of 10 µl in 1 hour at 37°C.

A deoxyinosine site is synthetically prepared with a dl in the middle of one strand of a 34 mer oligonucleotide duplex.

Reagents Supplied with Enzyme: 10X NEBuffer 4.

Reaction Conditions: 1X NEBuffer 4. Incubate at 37°C.

1X NEBuffer 4: 50 mM potassium acetate 20 mM Tris-acetate 10 mM magnesium acetate 1 mM DTT pH 7.9 @ 25°C

When using a buffer other than the optimal (supplied) NEBuffer, it may be necessary to add more enzyme to achieve complete digestion.

Unit Definition: One unit is defined as the amount of enzyme required to cleave 1 pmol of a 34 mer oligonucleotide duplex containing a single deoxyinosine site in a total reaction volume of 10 µl in 1 hour at 37°C.

A deoxyinosine site is synthetically prepared with a dl in the middle of one strand of a 34 mer oligonucleotide duplex.

Endonuclease V

Description: Endonuclease V is a repair enzyme found in E. coli that recognizes deoxyinosine, a deamination product of deoxyadenosine in DNA. Endonuclease V, often called deoxyinosine 3’ endonuclease, recognizes DNA containing deoxyinosines (paired or not) on double-stranded DNA, single-stranded DNA with deoxyinosines and to a lesser degree, DNA containing abasic sites (ap) or urea, base mismatches, insertion/deletion mismatches, hairpin or unpaired loops, flaps and pseudo-Y structures. It is believed that Endonuclease V needs another protein to repair the DNA, as it does not remove the deoxyinosine or the damaged bases (1,2,3).

Endonuclease V cleaves the second phosphodiester bond 3’ to the mismatch of deoxyinosine (2), leaving a nick with 3’-hydroxyl and 5’-phosphate (4).

Source: An E. coli strain containing a gene fusion of the Endo V gene and the gene coding for the maltose binding protein (MBP). The fusion protein is purified to near homogeneity and is active as a fusion. The protein contains 223 amino acids and has a molecular weight of 24.9 kDa (5).

Applications:
- Mismatch Cleavage
- Cleavage of oligonucleotides containing deoxyinosine and a weaker affinity for oligonucleotides containing base mismatches (5)

Supplied in: 250 mM NaCl, 10 mM Tris-HCl (pH 7.4 @ 25°C), 0.1 mM EDTA, 1 mM dithiothreitol, 0.15% Triton X-100, 200 µg/ml BSA and 50% glycerol.

Reagents Supplied with Enzyme: 10X NEBuffer 4.

Reaction Conditions: 1X NEBuffer 4. Incubate at 37°C.

1X NEBuffer 4: 50 mM potassium acetate 20 mM Tris-acetate 10 mM magnesium acetate 1 mM DTT pH 7.9 @ 25°C

When using a buffer other than the optimal (supplied) NEBuffer, it may be necessary to add more enzyme to achieve complete digestion.

Unit Definition: One unit is defined as the amount of enzyme required to cleave 1 pmol of a 34 mer oligonucleotide duplex containing a single deoxyinosine site in a total reaction volume of 10 µl in 1 hour at 37°C.

A deoxyinosine site is synthetically prepared with a dl in the middle of one strand of a 34 mer oligonucleotide duplex.

Reagents Supplied with Enzyme: 10X NEBuffer 4.

Reaction Conditions: 1X NEBuffer 4. Incubate at 37°C.

1X NEBuffer 4: 50 mM potassium acetate 20 mM Tris-acetate 10 mM magnesium acetate 1 mM DTT pH 7.9 @ 25°C

When using a buffer other than the optimal (supplied) NEBuffer, it may be necessary to add more enzyme to achieve complete digestion.

Unit Definition: One unit is defined as the amount of enzyme required to cleave 1 pmol of a 34 mer oligonucleotide duplex containing a single deoxyinosine site in a total reaction volume of 10 µl in 1 hour at 37°C.

A deoxyinosine site is synthetically prepared with a dl in the middle of one strand of a 34 mer oligonucleotide duplex.
Enzyme Properties

Activity in NEBuffers:
- NEBuffer 1: 75%
- NEBuffer 2: 50%
- NEBuffer 3: 100%
- NEBuffer 4: 100%

When using a buffer other than the optimal (supplied) NEBuffer, it may be necessary to add more enzyme to achieve complete digestion.

Heat Inactivation: 65°C for 20 minutes.

References: