GENERAL DESCRIPTION

J.T.Baker® Endonuclease Biotech Reagent is a cGMP product, designed for the degradation of both single stranded and double stranded DNA and RNA and is available in a variety of sizes to support processes from development to large scale commercial batches. J.T.Baker® Endonuclease Biotech Reagent is animal origin free (AOF)/non animal derived (nonADR) – manufactured from raw materials that contain NO animal parts, products, and/or by-products.

APPLICATION

J.T.Baker® Endonuclease is an enzyme based upon the native endonuclease of Serratia marcescens, enabling rapid clearance of residual DNA and RNA (Meiss, 1995) during the production and purification of both recombinant proteins and viral vectors. In AAV vector bioprocessing, J.T. Baker® Endonuclease has been shown to retain enzymatic activity in the presence of J.T. Baker® Cell Lysis Solution, enabling robust and efficient cell lysis and DNA/RNA degradation in a single step.

FEATURES	BENEFITS
High purity, bioburden and endotoxin tested	Quality based product specifications for consistent performance for research use to large-scale commercial manufacturing
Rapid clearance of residual DNA and RNA	Removal of nucleic acids from recombinant proteins, rAAVs, lentiviruses and other applications including prevention of cell clumping. Reduces viscosity for easier downstream processing
Ease of use	Able to be cleared with typical downstream processing, detectable by routine analytical methods
0.2 µm filtered solution	Reduction of aseptic manipulations
Various size offerings	Flexibility and scalability
Global cGMP manufacturing and distribution facilities	Reliable supply and availability in most countries worldwide
Proven performance with J.T. Baker® Workflow solutions	End to end solutions to streamline workflows and supply

SPECIFICATIONS

Purity by HPLC	≥ 99%
Appearance	Clear, colorless
Identity	Passes Test
Activity	≥ 250 Units / µL
Specific Activity	≥ 1.1 x 10^6 Units / mg
Total Aerobic Microbial Count	≤ 10 CFU / 100,000 Units
Total Yeast and Mold Count	≤ 10 CFU / 100,000 Units
Endotoxin	≤ 0.25 EU/1000 Units
Protease	None Detected

PROPERTIES

Unit Definition: When using sonicated salmon sperm DNA as a substrate, one unit of endonuclease is defined as the amount of enzyme that will produce acid-soluble oligonucleotides equivalent to ΔA_{260} of 1.0 in 30 minutes at pH 8.0, 37°C. **Optimal Conditions for Degradation of DNA and RNA:** Several operating conditions can affect the enzymatic activity of J.T. Baker® Endonuclease. **(Figures 1-4)**. The optimal conditions for degradation of DNA and RNA are listed below.

Operating Parameter	Optimal Condition
Temperature	37°C
pH	8.0 – 9.0
Magnesium Concentration (Mg^{2+})	2 mM
Monovalent ion Concentration (Na^{+})	< 50 mM

Figure 1: Temperature dependence of Endonuclease

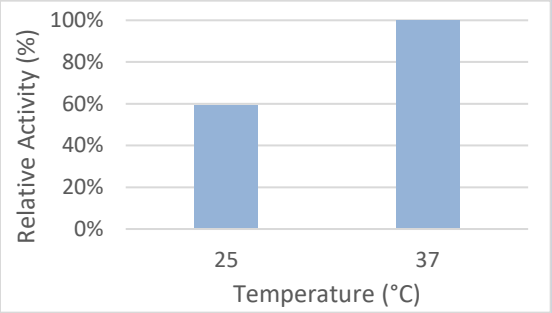


Figure 2: pH dependence of Endonuclease

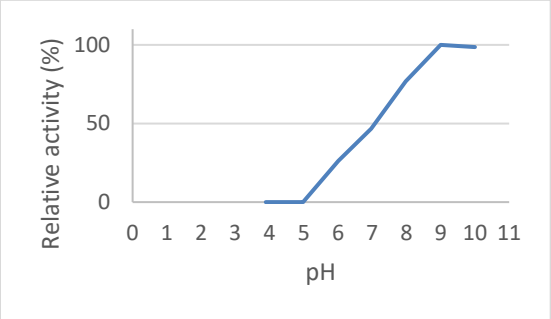


Figure 3: Mg^{2+} Dependence of Endonuclease

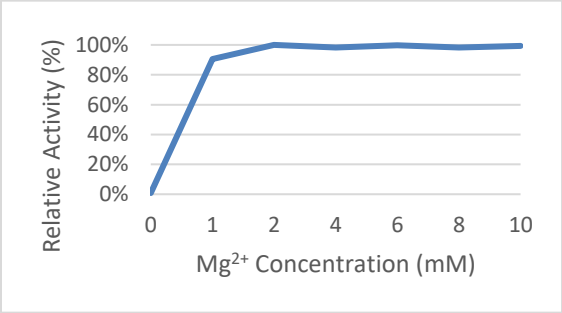
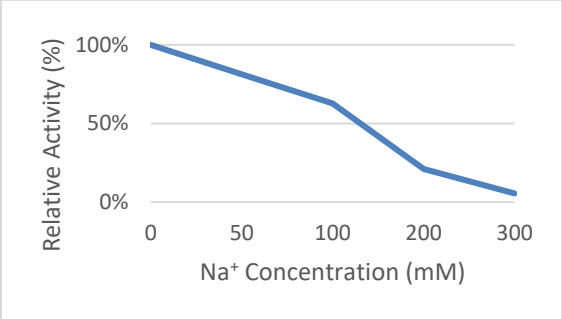


Figure 4: Na^{+} Deactivation of Endonuclease



INSTRUCTIONS FOR USE

Store J.T.Baker® Endonuclease solution at -20°C. The shelf-life for the product is 12-months after the date of manufacture when stored at or below -20°C. For most rAAV production processes, J.T.Baker® Endonuclease solution can be added to lysed cellular contents at a target concentration of 25 – 100 U/ml in combination with 2mM Magnesium Chloride Hexahydrate, part number JT2449, at 37°C and pH range of 8.0 – 9.0. J.T. Baker® Endonuclease solution demonstrated effectiveness during lysis of cells when used in conjunction with J.T.Baker® Cell Lysis Solution, a ready-to-use concentrated (100X) solution of non-ionic surfactants for AAV vector bioprocessing, part number BAKRG193. Endonuclease removal can be detected using CYGNUS Technologies EndonucleaseGTP® F960 ELISA Kit, VWR part number MSPP-F960 or equivalent endonuclease residual detection ELISA kit.

PRODUCT INFORMATION

Part Number	Unit of measure	Storage
BAKRGT20-05	25 KU	At or below -20°C
BAKRGT20-10	100 KU	
BAKRGT20-25	500 KU	
BAKRGT20-40	1,250 KU	
BAKRGT20-50	5,000 KU	
BAKRGT20-62	12,500 KU	
BAKRGT20-80	25,000 KU	

J.T. Baker® Workflow Solutions offer consistent performance, high quality, and cost-effective product, with assured availability due to our global presence. Visit Biopharma solutions | Avantor (avantorsciences.com) for additional information on Avantor™ J.T. Baker® Workflow Solutions for CGT Workflows.

References

Meiss, G. F. (1995). Sequence preferences in cleavage of dsDNA and ssDNA by the extracellular Serratia marcescens endonuclease. *Biochemistry*, 34 - 37.