Thomas Scientific

ArcticZymes Technologies

Salt Active Nucleases

For Bioprocessing

Cell and gene therapies and viral vector-based vaccines are currently among the most promising therapeutic areas. In these therapies, engineered viruses are commonly used as vectors to deliver and insert genetic material into cells to treat or prevent disease. Among the most promising tools are vectors based on adenoviruses, adeno-associated viruses (AAVs) and lentiviruses. To drive clinical studies and commercialisation, the development of scalable, robust and high-yielding manufacturing methods for these vectors remains a key challenge for the industry.

M-SAN High Quality

Bioprocessing grade

M-SAN HQ is the recent addition to our salt-active nuclease portfolio. M-SAN HQ has been developed for removal of nucleic acids at the near-physiological conditions used in many bioprocessing and biomanufacturing workflows, and outperforms other commercially available nucleases at these conditions.

Can be directly used in medium without buffer adjustments

This novel, nonspecific endonuclease is active over a broad pH range and displays optimum activity at salt concentrations between 125 – 250 mM. Due to the excellent performance at physiological conditions, M-SAN HQ can be used directly in the cell medium or the harvested supernatant, without buffer adjustments. This makes M-SAN HQ suitable for manufacturing of fragile vectors such as lentiviruses.

Excellent performance at physiological conditions

High purity (≥ 99%)

Compatible with M-SAN HQ ELISA

Application: DNA removal directly in cell medium

M-SAN High Quality has optimal activity around physiological conditions, which makes it ideal for DNA removal directly in mammalian cell media (Fig 3). In this case, HEK 293 cells were grown in DMEM for 48 hrs before nuclease treatment directly in medium (75 U/ml nuclease). The medium was supplemented with Mg^{2+} to 5 mM. Remaining DNA after 1 hr incubation at 37°C was quantified using Quant-iT™ PicoGreen™ dsDNA Assay Kit.

Optimal performance at physiological conditions

The high activity of M-SAN HQ at standard cell medium conditions leads to improved DNA clearance compared to other commonly used nucleases. In this case, a 5-fold reduction in residual DNA was achieved.

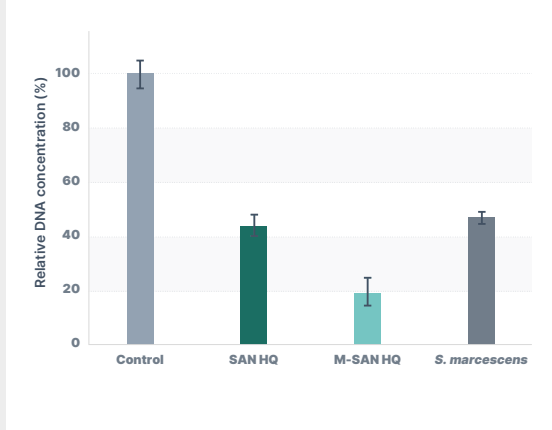

Fig 3 M-SAN HQ is effective when used directly in cell media.

M-SAN HQ outperforms other nucleases in removal of host-cell DNA from HEK 293 cells directly in cell media.

Properties

Source	Recombinantly produced in *Pichia pastoris*
Molecular weight	24.5 kDa
Protein purity	≥ 99% by SDS-PAGE analysis
Isoelectric point	8.62
Unit definition	One unit is defined as the amount of enzyme that causes a ΔA260 = 1.0 in 30 minutes at 37°C in 25 mM Tris-HCl pH 7.6 (@25°C), 2.5 mM $MgCl_2$, 150 mM NaCl, and 50 µg/ml calf thymus DNA.

Specificity	Nonspecific endonuclease cleaving single and double stranded DNA and RNA.
Working ranges	• Temperature: 20 – 50°C, optimal: 36 – 50°C • Salt concentration (NaCl): 10 – 500 mM, optimal: 125 – 250 mM • Mg^{2+}: > 0.5 mM is required for activity, optimal: 4 - 15 mM • pH: 6.5 – 9.5, optimal: 7.2 - 8.7 Note: The working range is defined as above 10% activity and optimal range as above 80% activity.
Tolerance to typical buffer additives	• DTT and other reducing agents may inactivate M-SAN HQ • Urea: Not recommended • EDTA: Not recommended

	Thomas No. / Article no.	Pack size	Concentration
SAN HQ	**CHM03X102** / 70920-202	25 kU	25 - 30 U/µl
	70920-150	500 kU	≥ 250 U/µl
	70920-160	5 MU	≥ 250 U/µl
	70920-100	Custom	Custom
SAN HQ Triton FREE	**CHM03X103** / 70921-202	25 kU	25 - 30 U/µl
	70921-150	500 kU	≥ 250 U/µl
	70921-160	5 MU	≥ 250 U/µl
	70921-100	Custom	Custom
SAN HQ 2.0 ELISA	**CHM03W717** / 70970-001	1 x 96 Well Plate	N/A
M-SAN HQ	**CHM03W715** / 70950-202	25 kU	25 - 30 U/µl
	70950-120	200 kU	≥ 250 U/µl
	70950-150	500 kU	≥ 250 U/µl
	70950-155	1 MU	≥ 250 U/µl
	70950-160	5 MU	≥ 250 U/µl
	70950-100	Custom	Custom
M-SAN HQ ELISA	**CHM03W716** / 70960-001	12 x 8 Strip Plate	N/A