ArcticZymes®

ArcticZymes Proteinase

ArcticZymes Proteinase is an unspecific endopeptidase originating from an Arctic marine microbial source. It has broad substrate specificity and is easy to inactivate after use.

Histones and other proteins are known to protect nucleic acids from interacting optimally with other DNA binding proteins and enzymes. ArcticZymes Proteinase is ideally suited for transforming chromatin and other dense nucleic acids to naked DNA. The enzyme is easy to heat-inactivate. This allows thermal inactivation at temperatures allowing RNA integrity as well as avoiding dissociation of dsDNA.

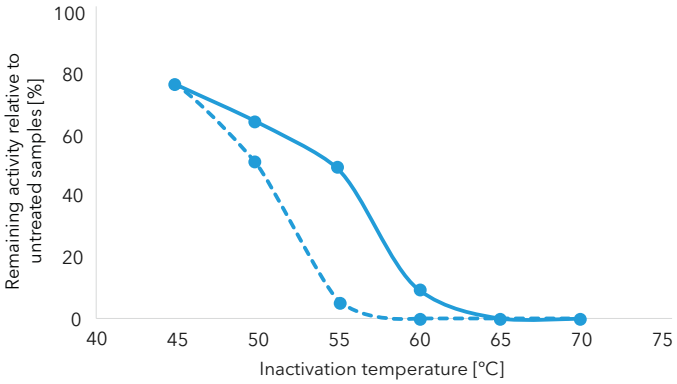

Figure 1: ArcticZymes Proteinase is easy to inactivate after use. Figure shows remaining activity after incubation of ArcticZymes Proteinase at different temperatures. Incubation for 30 minutes at indicated temperature in presence of 50 (solid line) or 300 (dotted line) mM NaCl. Remaining activity in % of sample kept on ice in same buffer.

Unit definition

One unit is defined as the amount of enzyme that produces one µmol 4-nitroaniline (extinction coefficient 8.8 mM^{-1} at 410 nm) at 25°C, pH 8.0 per minute (buffer conditions 50 mM Tris-HCl pH 8.0, 1% DMSO, 1 mM Suc-Ala-Ala-Pro-Phe-pNA).

Optimal reaction conditions

Optimal enzyme activity is between pH 7–10. Recommended temperature range for activity is from 25–40°C. ArcticZymes Proteinase is not dependent of divalent cations such as Calcium (Ca^{2+}) for activity, and is therefore active in buffers containing EDTA (<40°C reaction temperature). ArcticZymes Proteinase is compatible with digestion of proteins in the presence of SDS (0.2–1%) and Urea (1–5 M). The enzyme tolerates 500 mM Guanidine Thiocyanate and 1% Triton X-100 (>50% activity). No significant loss of activity at 400 mM NaCl is observed.

Inactivation

Recommended inactivation conditions are incubating the enzyme at 60°C for 15–30 min. Inactivation temperature and time can be adjusted to suit desired application or stringency on residual protease activity. ArcticZymes Proteinase is susceptible to EDTA and DTT at elevated temperatures (>40°C), so EDTA or DTT will give additive effect upon inactivation.

Inhibitors

The enzyme is inhibited by general serine protease inhibitors, such as PMSF.

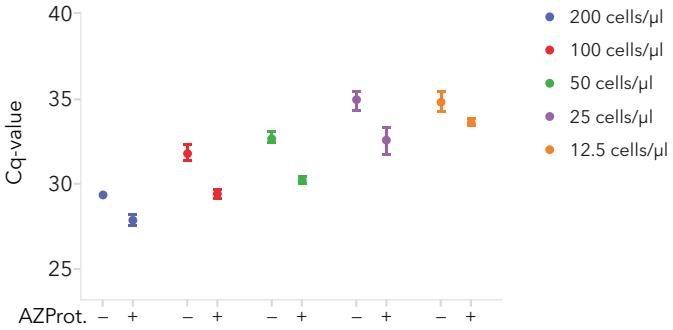

Figure 2: The indicated amount of human cells were lysed in 200 µl single cell lysis buffer supplemented with 7.5 U/ml AZ Proteinase (AZProt), using no-proteinase buffer as reference. 1 µl of lysate was used directly in 10 µl qPCR's to quantify human gDNA. AZProt led to improved detection of gDNA for all cell amounts tested.

Storage and stability

Optimal stability and storage condition is between pH 6–9. The enzyme is stable upon storage at -20°C for >1 year. ArcticZymes Proteinase is also stable upon storage at 4°C (>6 months) and room temperature (>4 weeks). ArcticZymes Proteinase is stable at dilute concentrations (<0.1 mg/ml) in solutions.

Ordering information

Product name	Catalogue #	Concentration	Size	Units
ArcticZymes Proteinase	71600-201	200 U/ml	250 µl	50 U
ArcticZymes Proteinase	71600-110	200 U/ml	5 ml	1000 U
ArcticZymes Proteinase	71600-100	According to agreement	According to agreement	According to agreement

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