Saltonase

(HL-Nuclease)

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Saltonase is a 28.4 kDa, cold-active, heat-labile recombinant endonuclease produced in *E.coli*. **Saltonase** originates from psychrophilic bacteria and effectively digests all types of DNA and RNA substrates in different buffer conditions and a broad range of temperatures. It is very active in demanding conditions, including low temperatures and environment with high salt content. These features make **Saltonase** extremely useful for removing undesired nucleic acids contamination during purification of proteins in laboratory and manufacturing workflows.

Features and advantages

- → Highly active in a broad range of temperatures (>20% at 8–45°C) – Fig. 1.
- → Extreme nucleolytic activity at high salt concentrations (optimal concentration range for NaCl or KCl is 0–1.1 M (Fig. 3), and other buffer additives (Fig. 5), which can significantly improve efficiency and purification yield in various workflows.
- → Highly active in the typical buffers and grow media.
- → Requires ≥1 mM Mg^{2+} (for salt concentrations range 0.25–0.5 mM NaCl or KCl) to activate (Fig. 2, 4) and shows a broad spectrum of pH activity (optimum at pH 7.5–9.0).
- → Irreversible thermal inactivation at low temperature (15 min at 52°C in the presence of 1 mM DTT).

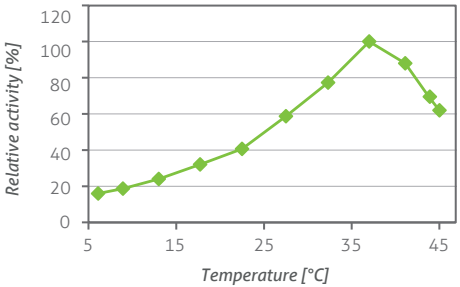

Fig. 1. Saltonase relative activity vs temperature.

Its optimum activity is at 37°C, but it works over a broad range of temperatures (>20% at 8–45°C). The activity of **Saltonase** was tested in 50 mM Tris-HCl buffer, pH 8.0, containing 100 mM $MgCl_2$.

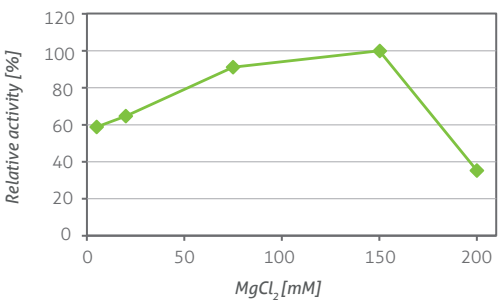

Fig. 2. The effect of Mg^{2+} ions on the Saltonase activity.

Saltonase is active in a broad range of Mg^{2+} ions' concentrations (1–200 mM). The activity of **Saltonase** was tested in 50 mM Tris-HCl buffer, pH 8.0.

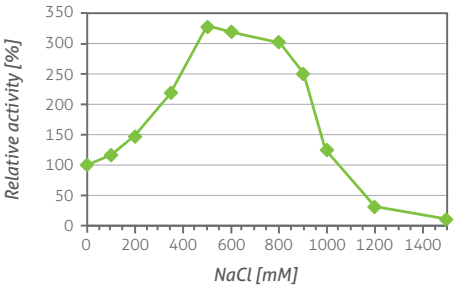

Fig. 3. The effect of Na^+ ions on the Saltonase activity.

Saltonase is active in a broad range of Na^+ ions' concentration with optimum activity between 0–1100 mM (over 80% of Standard Activity) and maximum activity at 500 mM of NaCl.

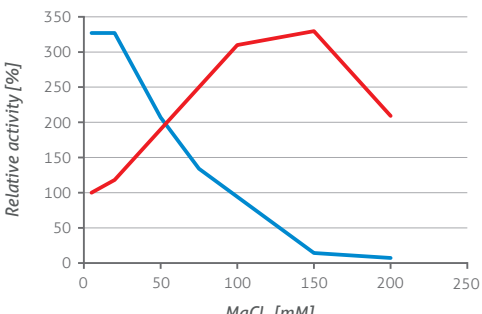

Fig. 4. The relative activity of Saltonase in different salt concentrations and Mg^{2+} ions concentrations.

Saltonase's activity graph, depending on NaCl and Mg^{2+} ions concentration in the buffer, determines optimum reaction conditions.

Additives	Tolerance level range
NaCl / KCl	0–1.4 M
Urea tested range	0–6.0 M
Imidazole tested range	0–0.4 M
Ammonium sulfate tested range	0–0.2 M
Triton X-100 tested range	0–15%
SDS	not recommended

Fig. 5. Tolerance to most popular purification buffers' additives.

Saltonase retains activity in a broad range of listed additives' concentrations (excluding SDS).

Applications

- → Purification of biologics from residual nucleic acids in biopharma manufacturing.
- → Purification of recombinant proteins and enzymes for research and diagnostic use.
- → Removal of undesired nucleic acids contamination in molecular biology reagents in demanding systems.
- → Reduction of viscosity in biological samples (during production, automation).

Additional information

- The optimal, final concentration of Saltonase in a reaction depends on several factors (level of nucleic acids contamination, incubation temperature and time, salt concentration and other compounds present in the reaction mixture). Much more Saltonase is needed for total nucleic acids removal than for viscosity reduction. The amount of Saltonase and incubation conditions have to be determined experimentally (we recommend using 5–100 U of Saltonase per 1 ml of reaction mixture or lysate at 20–37°C for 30–60 min).
- For the optimal Saltonase activity, Mg^{2+} ions are required.
- Inactivation of Saltonase depends on the concentration of the reducing agent, inactivation time and temperature. We recommend inactivating Saltonase by incubation at 52°C for 15 min in the presence of reducing agents such as DTT (1–10 mM).
- **The enzyme requires at least 1 mM DTT to be completely inactivated.**

Quality control

- → The purity >90% determined by densitometry of SDS-PAGE.
- → Undetectable proteolytic activity.

Unit Definition

One unit (U) is defined as the amount of enzyme that causes an increase in absorbance at 260 nm of 1.0 in 30 minutes at 37°C in 50 mM Tris-HCl buffer, pH 8.0 (25°C) supplemented with 5 mM $MgCl_2$, 0.1 mg/ml BSA and 0.5 mg/ml herring sperm DNA as a substrate.

Storage buffer

20 mM Tris-HCl pH 7.5; 500 mM NaCl; 5 mM $MgCl_2$; 50% (v/v) glycerol

Saltonase (HL-Nuclease)

Component	EN32-250 25 000 U	EN32-050 5 000 U	EN32-S 500 U
Saltonase (20 U/µl)	1250 µl	250 µl	25 µl

Additional information

Storage conditions

Store at -20°C in a freezer without a defrost cycle.
For long-term storage place at -80°C freezer.

Stability

Saltonase is stable at -20°C for at least 2 years.
No loss in activity was observed after 11 days of incubation at 37°C or 30 hours at 50°C.
Saltonase does not lose its activity at least ten successive freeze/thaw cycles.

Shipping conditions

Shipping on blue/dry ice.

ⓘ For research use only

Expiry

Information on the label

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