

ATP Kit SL

Monitoring of ATP in e.g. assays of enzymes and metabolites, cell lysis or platelet aggregation



- Fast Assay: Results within minutes
- Very Sensitive: 10^{-15} mol or 10^{-12} mol/L ATP
- Reliable: Stable, Ready-to-use ATP Standard
- Cost-efficient: No Standard curve required
- Flexible: Choice of μ -plate & cuvette methods

ATP Kit SL

Intended use

ATP Kit SL is intended for monitoring of adenosine triphosphate (ATP) in the range 10^{-12} - 10^{-6} mol/L. The low decay rate of the light emission (around 0.9 % per min) is due to a low consumption of ATP in the firefly luciferase reaction, and a luciferase activity remaining unchanged during the measurement.

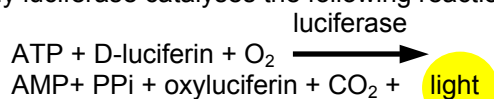
This allows enzymatic formation or degradation of ATP and cellular release of ATP to be monitored by measuring the light intensity¹.

Applications

1. Assays of enzymes and metabolites participating in ATP converting reactions.
2. Monitoring of oxidative phosphorylation and photophosphorylation.
3. ATP release during cell lysis.
4. ATP release during platelet aggregation.

Assay principles

Firefly luciferase catalyses the following reaction:



The assay has been optimised to give a stable light at all ATP levels up to 10^{-6} mol/L.

Instruments

The stable light makes it possible to use manual single tube luminometers, automatic tube luminometers or microplate luminometers. The detection limit depends on luminometer sensitivity.

Kit contents

1. The kit is intended for 200-1000 assays depending on the final assay volume (0.2-1 mL).
2. ATP Reagent SL. 4 vials of lyophilised reagent containing D-luciferin and luciferase.
3. Diluent C 10 mL. 4 vials for reconstitution of ATP Reagent SL.
4. ATP Standard 5 mL. 4 vials containing 10^{-5} moles/L of ATP.
5. Tris-EDTA Buffer 2x100 mL. 2 bottles containing 0.1 mol/L Tris (hydroxymethyl) aminomethane, 2 mmol/L EDTA and adjusted to pH 7.75 with acetic acid.

Assay procedure using internal ATP Standard

The light emission is measured before and after the addition of a known amount of ATP. This strongly increases the reliability of the assay and makes it possible to express ATP results in moles rather than rlu or other non-chemical units. The procedure below is for tube luminometers. The assay can also be automatically performed in microplate luminometers.

1. Add sample and Tris-EDTA Buffer to give a total volume of 0.8 mL in the cuvette.
2. Add 0.2 mL ATP Reagent SL and monitor the light emission corresponding to sample ATP, I_{smp} .
3. Add 10 μL of ATP Standard and measure the light emission corresponding to sample plus standard ATP, $I_{\text{smp+std}}$.

Calculations:

Calculate the sample ATP concentration in the cuvette by the following equation:

$$\text{ATP}_{\text{smp}} = 10^{-7} \times I_{\text{smp}} / (I_{\text{smp+std}} - I_{\text{smp}})$$

The factor 10^{-7} is the concentration of ATP Standard in the cuvette.

¹ A. Lundin (2000) Use of firefly luciferase in ATP-related assays of biomass, enzymes, and metabolites, *Methods Enzymol.* 305, 346-370

Product characteristics

Detection limit: 10^{-15} mol or 10^{-12} mol/L ATP
No. of determinations (cuvettes): 200
No. of determinations (microplate): 1000

Optional disposables

ATP-free cuvettes with stirring wings
(outer \varnothing 12 mm)

Ordering info

Art No	Description
144-041	ATP Kit SL
681000	Cuvettes, 1000 pcs