ATP Assay Kit (Colorimetric/Fluorometric) ab83355

Overview

Product name: ATP Assay Kit (Colorimetric/Fluorometric)
Detection method: Colorimetric/Fluorometric
Sample type: Urine, Serum, Plasma, Other biological fluids, Tissue Extracts, Cell Lysate
Assay type: Quantitative
Sensitivity: < 1 µM
Assay time: 1h 00m

Product overview:
ATP Assay Kit (Colorimetric/Fluorometric) (ab83355) use a robust, simple method; the ATP assay protocol relies on the phosphorylation of glycerol to generate a product that is easily quantified by colorimetric (ODmax = 570 nm) or fluorometric (Ex/Em = 535/587 nm) methods. This kit can detect as low as 1 µM of ATP in various samples.

ATP assay protocol summary:
- add samples (deproteinized) and standards to wells
- add reaction mix and incubate for 30 min at room temp
- analyze with microplate reader

If you require a more sensitive product, we recommend Luminescent ATP Detection Assay Kit (ab113849), which can detect as low as 1 pM of ATP.

Notes

Related assays
Review the cell health assay guide to learn about kits to perform a cell viability assay, cytotoxicity assay and cell proliferation assay.

Review the metabolism assay guide to learn about assays for metabolites, metabolic enzymes, mitochondrial function, and oxidative stress, and also about how to assay metabolic function in live cells using your plate reader.

How other researchers have used ATP Assay Kit ab83355
This ATP assay kit has been used in publications in a variety of sample types, including:
- Human: cell culture lysates¹, primary monocyte cell culture lysates², HCT116 cell culture supernatants³
- Mouse: heart tissue⁴, liver⁵, C2C12 and L929 cell lysates⁶, primary thymocyte cell culture lysates⁷, cardiac tissue⁸
- Rat: primary hippocampal neuron cell culture lysates⁹, liver tissue¹⁰, skeletal muscle¹¹

- Pig: kidney cell culture lysates\textsuperscript{12}, heart tissue\textsuperscript{13}
- C elegans tissue\textsuperscript{14}
- \textit{Chlamydomonas reinhardtii} algae\textsuperscript{15}


Platform
Microplate reader

Storage instructions
Store at -20°C. Please refer to protocols.

<table>
<thead>
<tr>
<th>Components</th>
<th>Identifier</th>
<th>100 tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATP Assay Buffer</td>
<td>WM</td>
<td>1 x 25ml</td>
</tr>
<tr>
<td>ATP Converter (lyophilized)</td>
<td>Blue</td>
<td>1 vial</td>
</tr>
<tr>
<td>ATP Probe (in DMSO)</td>
<td>Red</td>
<td>1 x 200µl</td>
</tr>
<tr>
<td>ATP Standard (1 µmol; lyophilized)</td>
<td>Yellow</td>
<td>1 vial</td>
</tr>
<tr>
<td>Developer Mix (lyophilized)</td>
<td>Green</td>
<td>1 vial</td>
</tr>
</tbody>
</table>

Images

Ab83355 was used to determin ATP levels in rat pancreas islets as an ischemic marker to predict transplantation outcomes. We extracted ATP from fresh pancreas that have undergo different time of cold ischemia: 0, 2, 4, 6, 8 and 10h and in situ. ATP were extracted in Perchloric acid (PCA-2M) and grind using a Polytron. PCA were removed using potassium hydroxide (KOH – 2M) and pH was adjust around 7-8. Samples were conserved at -80°C before utilization.
Maiti AK et al (2018) used ATP assay kit ab83355 to measure mitochondrial ATP generation in an *in vitro* mouse intestinal model treated with cytokines in the presence and absence of VIP (vasoactive intestinal peptide). VIP was induced by *C. rodentium* infection and cytokines.

The chart shows a comparison of ATP levels of HepG2 treated with 0, 10 and 100 µM for 48 hours, DR-H2O2 W1 (damage recovered cells using hydrogen peroxide with a recovery time of one week) HepG2 cells and MDA-MB-231 cells treated with 0, 10 and 100 µM of NaHS for 48 hours. Data is shown as percent of ATP levels in untreated cells. ATP levels were determined using ATP assay kit (ab83355).
MCF-7 cells are transfected with vector, osteopontin-a, osteopontin-c or osteopontin-a plus -c. Cells are plated on poly-HEMA and seeded at $4 \times 10^5$ cells per well and incubated for two days under standard culture conditions. ATP levels are measured using ATP assay kit (ab83355).

Example of fluorometric ATP assay standard curve.
Maiti AK et al. (2015) used ATP assay kit ab113852 to measure mitochondrial ATP generation in murine distal colon after *C. rodentium* infection.

ATP levels measured in mouse colon tissue

Image courtesy of Maiti A K et al. Sci Rep. 2015; 5: 1543. doi: 10.1038/srep15434. Reproduced under the Creative Commons License http://creativecommons.org/licenses/by/4.0/

Example of colorimetric ATP assay standard curve.

ATP assay performed with ab83355

Quantitation of ATP in fish liver (2.5µl of 10 times diluted sample), fish muscle (5µl of 10 times diluted sample) and Jurkat cell lysate (5 ul) using fluorometric assay. Samples were spiked with known amounts of ATP (300pmol).

ATP assay performed with ab83355

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