NUCLEAR-ID® Green chromatin condensation detection kit

A highly permeable green-emitting dye for enhanced detection of apoptosis-induced chromatin condensation

The NUCLEAR-ID® Green Chromatin Condensation Detection Kit detects nuclear condensation using a DNA intercalating dye that brightly stains the condensed chromatin of apoptotic cells, but only dimly stains the uncondensed chromatin of healthy living cells.

Mechanism of Action

The cell-permeable dye used in this application is an aromatic, planar cationic structure that inserts between stacked base pairs on the DNA duplex, providing an environmentally-dependent fluorescence enhancement of the dye molecules and large increases in fluorescence signal relative to the free dye in solution. Since the signal enhancement provides a proportional response, direct quantitation of DNA is possible. Further signal increase is observed upon DNA condensation during apoptosis. Considering the general mutagenic effect of nucleic acid-binding dyes, careful storage and handling of this dye is recommended.

A control apoptosis-inducing agent, staurosporine, is provided for monitoring apoptotic changes in nuclear organization. Potential applications for live-cell studies using the kit include monitoring the stages of chromatin condensation and rapid testing of compounds that induce apoptosis.

Apoptosis is recognized as a pathway of highly orchestrated signaling events, and of critical importance in biological processes and pathologies including development, aging and cancer. Nuclear condensation is one of the more prominent hallmarks of the many morphological features associated with apoptosis, including cell membrane blebbing, cell shrinkage, nucleosomal fragmentation, and formation of fragmented apoptotic bodies.

Citations: 12 View Online »

Ordering Information

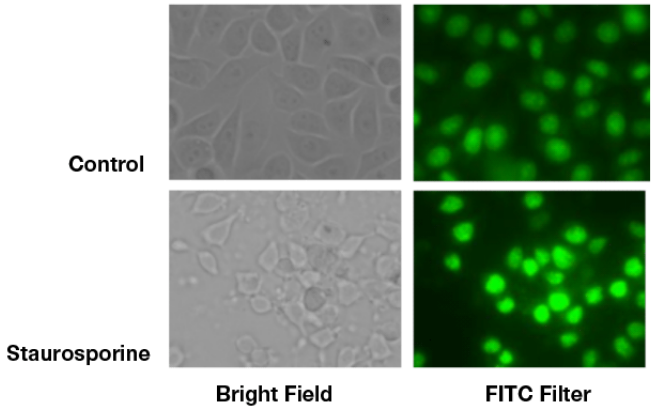
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ENZ-51021-K200	1Kit

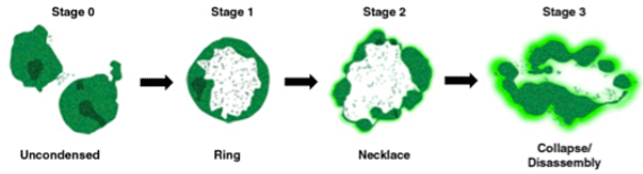
- Dye excitable with standard 488nm laser
- Intercalating dye with superior permeability with any live cell line
- Easy no-wash mix and read protocol
- Eliminates need for specialized 350nm UV laser required for Hoechst dyes and reduces chances for channel interference
- No interference from small molecule fluorescence or cell autofluorescence

Manuals, SDS & CofA

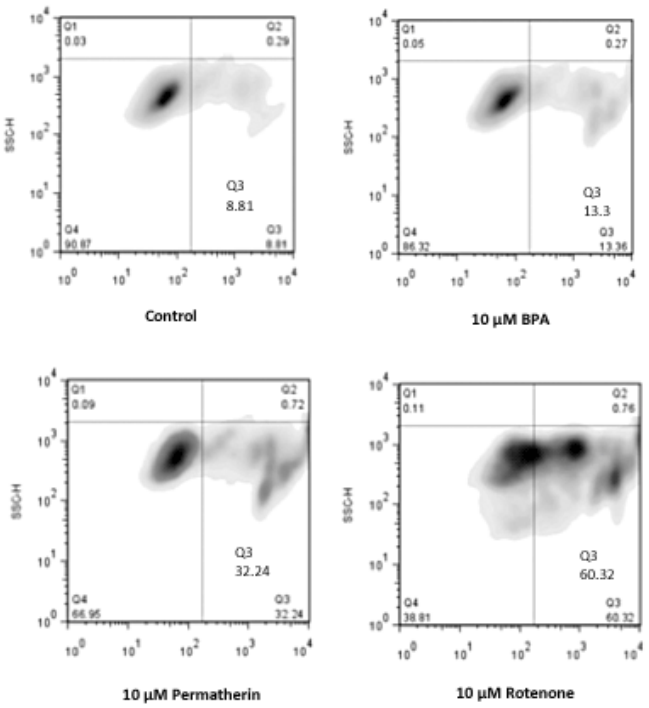
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Flow cytometry analysis of chromatin condensation in response to application of environmentally toxic compounds. Analysis was performed following 16-hour treatment of 1 x 106 cells/ml Jurkat cells with various compounds at the indicated concentration. The 488nm excitable green-emitting dye eliminates the need for specialized UV lasers required by Hoechst dye-based assays.



Chromatin condensation as observed by fluorescence microscopy using a standard 488nm laser. HeLa cells were treated for 4 hours with DMSO (Control) or 2 µM Staurosporine on a slide and stained with 5 µM NUCLEAR-ID® Green dye. The intercalating dye exhibits increased fluorescence upon chromatin condensation, a hallmark of apoptosis.



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Handling & Storage

Handling	Protect from light. Avoid freeze/thaw cycles.
Short Term Storage	-20°C
Long Term Storage	-80°C
Shipping	Dry Ice

Regulatory Status

RUO - Research Use Only

Product Details

Application	Flow Cytometry, Fluorescence microscopy, Fluorescent detection
Application Notes	This kit provides a rapid assay for nuclear condensation, a prominent hallmark of apoptosis.
Contents	NUCLEAR-ID® Green Cell Cycle Detection Reagent, 100 µl Apoptosis inducer (Staurosporine), 50nmoles 10X Assay Buffer, 30 ml
Quality Control	Absorption peak of NUCLEAR-ID® Green dye: λ_{max} = 507 ± 4 nm % purity of NUCLEAR-ID® Green dye by HPLC: ≥93% A sample from each lot of NUCLEAR-ID® Green Cell Cycle Analysis Kit is used to analyze Jurkat cells using the procedures described in the user manual. The following results are obtained: (a) Untreated control cells: Viable cells: >85%; Apoptotic cell population: <15% (b) Apoptosis inducer treated cells: Viable cells: >60%; Apoptotic cell population: <30% (c) Mean fluorescence of apoptotic cells / mean fluorescence of viable cells: >40
Quantity	200 assays

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