



APPLICATION NOTE

AN006-01

Determination of neurite length in neural (SH-SY5Y) cells

Aim

The objective to use the Cell IQ® to analyze the neurite length of neuronal cells (SH-SY5Y cells). Measurement of neurite length is considered a good end point test as an indicator of toxic response. This study used amitriptyline to induce a toxic response.

Materials & methods

Cells

SH-SY5Y cells and MEM/ Ham's F12K culture media were added to a Nunclon 48 well tissue culture plate. Cell concentration was 2×10^4 cells/well.

Cells were incubated overnight.

The test

To 4 duplicate wells Amitriptyline at concentrations of 5, 10, 25, 50 μ M concentrations were added. As a control 100 μ l/ well, 3x stock solutions, serum-free exposure medium was added to 4 further duplicate wells.

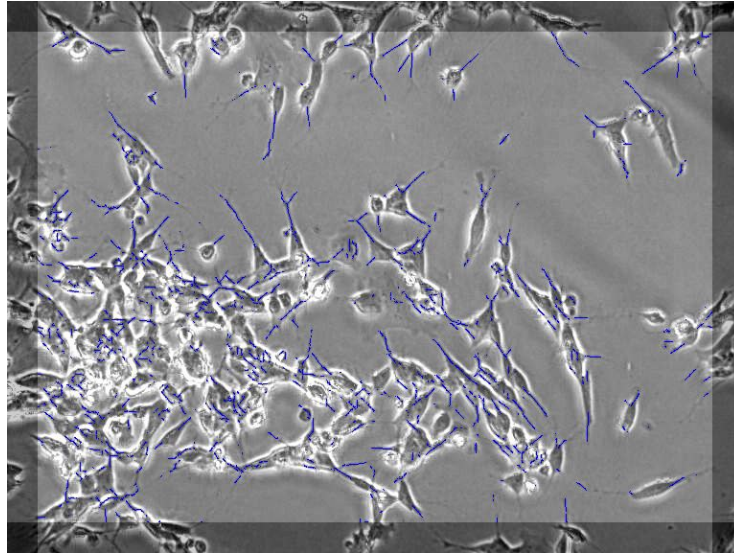
Cell IQ

The Cell IQ was set with a protocol to measure one position in every well. A cycle time of 10 minutes was used and all images measured were recorded for analysis.

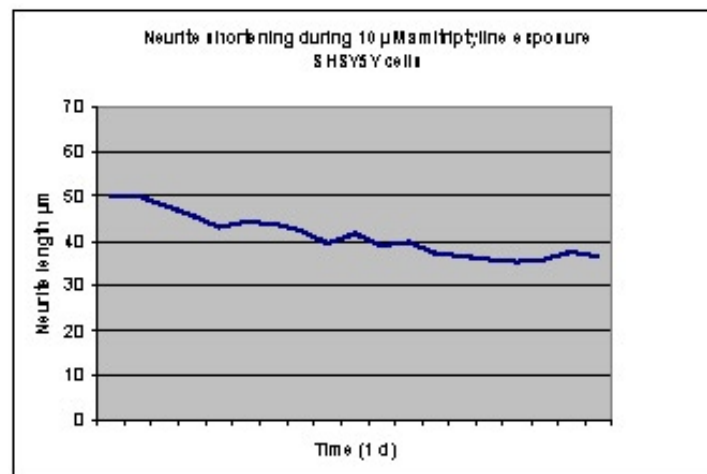
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Results

Below is a typical image extracted from the time-lapse image series recorded during the period of the test. The Cell IQ automatically identified the neurites and indicated these by the blue colouring seen in the image below. The analysis automatically counted the cells and measured the length of the neurites for each well position. The results were directly exported into Excel and the following graph drawn. Below is a graphical output from the 10 μ M amitriptyline exposure.



Length of the neurites (μ m/cell)



Conclusion

Cell-IQ automates visualization and quantification of neurite formation in cells. That the measurement of neurite formation can be continuously outputted in real time. In addition the entire incubation is recorded allowing re-analysis for additional parameters at any time in the future.