

# MEASURE WHAT REALLY MATTERS

## Thymidine Kinase 1 Immunoassay-AroCell TK 210 ELISA *Cell Proliferation Biomarker*

### In-vitro Studies of Cell Proliferation and Malignancies

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- Standard Microtiter ELISA for Thymidine Kinase 1 (TK1)
  - Biomarker of cell proliferation
  - *In-vitro* and clinical studies – Translational biomarker
  - TK1 may provide information on drug mechanisms
  - Unique sample preparation releases TK1 from complexes
  - Good correlation with TK1 activity assays in leukemias
  - Improved sensitivity for TK1 for solid tumors
  - Applicable to many tumors
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#### THYMIDINE KINASE 1

Thymidine Kinase 1 (TK1) is a key enzyme in DNA replication and TK1 presence in cells is a powerful indicator of active cell proliferation.

Thymidine Kinase 1 (TK1) has been long known as a valuable biomarker of cellular proliferation and elevated serum TK1 enzyme activity is found in subjects with many forms of cancer, including leukemia, lymphoma, prostate, breast, lung, sarcoma and colon cancer.

However, previous methods have been based on enzyme activity measurements that are complex, may be subject to interference and underestimate the serum TK1 forms found in subjects with solid tumors. A sensitive and specific TK1 immunoassay can meet these challenges<sup>1</sup>.

#### The AroCell TK 210 ELISA kit

Serum TK1 exists as many forms with differing molecular weights and enzyme activities, leading to potential under-estimation using enzyme activity methods plus that much of the serum TK1 in subjects with solid tumors is enzymatically inactive.

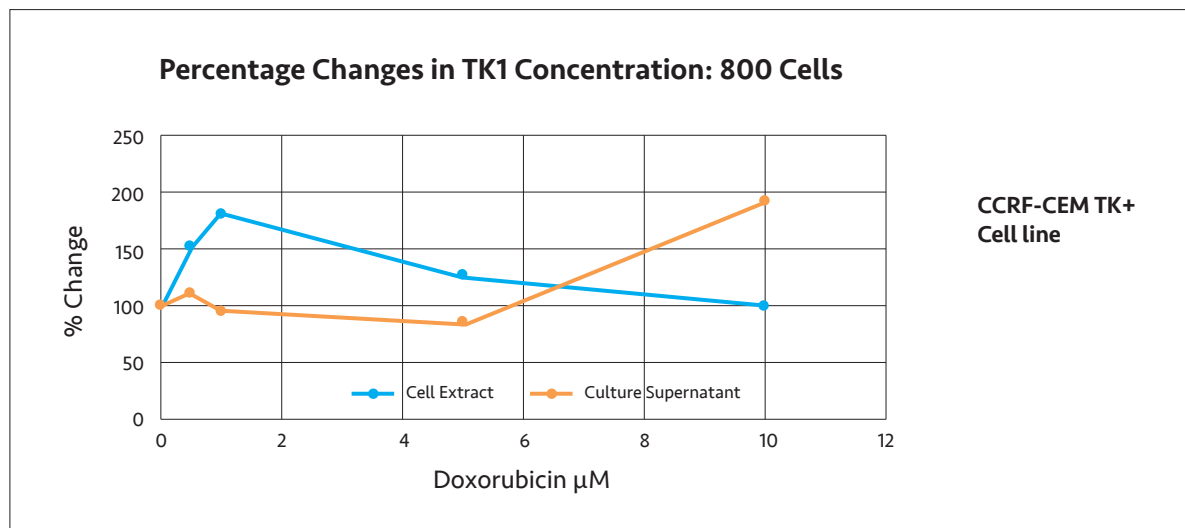
However, all TK1 forms express the TK 210 epitope and the AroCell TK 210 ELISA kit, based on monoclonal antibodies specific to TK 210, enables their assay. Furthermore, the unique sample dilution buffer breaks up the high molecular weight TK1 complexes leading to greater consistency between samples.

The AroCell TK 210 ELISA kit is a standard microtiter ELISA providing same-day results. Each kit is sufficient for a standard curve, controls and 40 samples in duplicate. All necessary components are provided.

The AroCell TK 210 ELISA kit is for research use only in the USA.  
Not for use in diagnostic procedures.



## AroCell TK 210 ELISA and In-Vitro Studies of Drug Effects



The figure illustrates the changes in intra-cellular TK1 / TK210 and in the culture supernatant in cultures exposed to various doses of Doxorubicin for 24 hours. The cells were cultured in microtiter plates and lysed using RIPA buffer. The extracts were assayed following the standard AroCell TK 210 assay procedure.

Doxorubicin causes DNA damage and note the initial increase in TK1 content, perhaps in an attempt to repair it. At higher doses, cell death occurs.

This is similar to the clinical situation where PET scanning using  $^{18}\text{F}$  labelled thymidine derivatives where tumors show an initial increase in brightness (flare) at the initiation of therapy followed by a decrease as treatment progresses.

Changes could be seen using only 800 cells.

### The AroCell TK 210 ELISA Kit in Studying Drug Effects In-Vitro

- Information provided on the mechanism of drug effects
- Only a few cells required – suitable for high throughput screening
- Translational biomarker

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#### References:

1. Jagarlamudi KK, et al. 2017 NCRI Cancer Conference, 5-8 Nov, Poster 40, ID 1387  
Novel method for studying the in-vitro effects of anti-cancer agents The assay of thymidine kinase 1 (TK1) in cell culture utilising AroCell TK 210 ELISA



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