CellCountEZ: Rapid Assay to Measure Eukaryotic Cell Growth and Viability

Unmet Need

Assays to measure cell growth and survival assays used in the laboratory have many widely known practical and technical limitations, including non-linearity, high background and cumbersome protocols. In particular, commonly used assays using tetrazolium salts to generate a colored product lack sensitivity and accuracy due to reliance on mitochondrial bioreduction and other factors. The market for all cell counting assays is in excess of US$ 10B annually.

Opportunity

Biotechnology companies and biology laboratories have a universal need for accurate measurements of relative cell growth and viability in tissue culture media and in bioreactors, e.g. to monitor growth of cancer cells or monoclonal antibody secreting hybridoma cells, respectively.

Addressing limitations of current methods, LIMR researchers have developed a fast, accurate and inexpensive assay suitable for measuring cell growth and viability in tissue culture settings.

This assay, termed CellCountEZ, uses a nontoxic detector compound that does not compromise cell viability itself, enabling experimental and bioreactor uses in which periodic longitudinal measurements are desired. It is rapid, accurate, highly linear, inexpensive and amenable to any eukaryotic cell system.

Unique Attributes

The detection compound used in this patented system is non-toxic, enabling its use in bioreactors to measure cell viability and growth longitudinally to the highest cell densities without loss of linear response. These features of CellCountEZ render it useful in tissue culture settings used in biology laboratories and biotechnology companies.

Applications

CellCountEZ quickly and accurately quantitates relative cell number in a highly linear manner, based on colorimetric detection of beta-mercaptoethanol produced by metabolic reduction of the dithiol reporter compound hydroxyethyldisulfide (HEDS).

CellCountEZ can also be used to quickly quantify the relative number of viable cells remaining in tissue culture after toxic treatments, e.g. chemotherapeutics, oxidants, or radiation. This test has been shown to be superior to other tissue culture assays in its ability to rapidly and accurately determine relative cell number and viability in a highly linear and nontoxic fashion.

Stage of Development

The test has market sales from Lankenau and is available for wide distribution.

Intellectual Property

U.S. Patents No. 8,697,391 and 9,766,226

Collaboration Opportunity

Actively seeking licensees and distribution partners.

References and Publications

Li J, Zhang D, Ward KM, Prendergast GC and Ayene IS. (2012). Hydroxyethyl disulfide use in an efficient metabolic assay for cell viability in vitro. Toxicol. In Vitro 26, 603-612.

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