Markers for Abnormal Cells

Published date: Aug. 12, 2014

Technology description

This invention is a simple, inexpensive, rapid, and highly sensitive method for detecting the presence of certain types of tumor cells in a sample of human blood through the detection of activating matriptase expression as a marker of tumor progression for

• non-Hodgkin's lymphoma,

• Hodgkin'd lymphoma,

• leukemia or myeloma, and possibly other cancers.

Matriptase is a protease that has been shown to play a role through the degradation of extracellular matrices in metastatic invasive cancers. Matriptase is generally not expressed on lymphoid or myeloid cells in whole blood, thus if there is an elevation in the levels of activated matriptase in a cell sample, it is indicative of an underlying cancerous condition.

This technology also provides for kits to monitor the progression of the development of abnormal lymphoid or myeloid cells in a subject over time by means of monitoring matriptase levels from various samples taken at different time points to monitor disease status, relapse, and/or determine therapeutic effectiveness.

Application area

Once matriptase is activated through the assay, the active matriptase can be measured in a cell sample.

Advantages

· This assay is inexpensive, presumably costing less than $10 in consumables and reagents and does not involve the use of expensive flow-cytometry equipment or histological approaches that can be slow requiring experts to prepare and interpret results.

· This assay is a very rapid and sensitive detecting leukemia and lymphoma cells in blood as few as 2x105 tumor cells per ml, which is less than a 20 th of the number of tumor cells per ml blood that must be detected for a diagnosis of chronic lymphocytic leukemia (5x106).

· This assay provides early screening so the healthcare worker may begin treatment based on the measured activated matriptase levels in blood,beforethere are detectable measurable signs of a condition marked by the presence of abnormal cells in the subject.

· Kits for determining the presence or absence of abnormal lymphoid cells or abnormal myeloid cells in a cell sample from a subject using venous whole blood or bone marrow

Institution

Georgetown University