Diagnosis/Monitoring of Glioblastoma & Acute Myeloid Leukemia by (D)-2-Hydroxyglutarate Test

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Technology description

Diagnosis and monitoring of IDH1/IDH2/IDH3 dependent diseases such as: Glioblastomas, astrocytoma, oligodendrogliomas, oligoastrocytoma, acute myeloid leukaemia (AML), chondrosarcoma, intrahepatic cholangiocarcinoma, angioimmunoblastic T cell lymphoma. The technolgy describes a patented test, which is a simple and robust enzymatic assay with a readout in 3 hours. The test is suitable for 96-/384-well format, less expensive/time-consuming and high-throughput possible in opposite to established GC-MS test.

Solutions

Researchers from DKFZ and University Hospital of Heidelberg developed a test for detecting D2HG in diverse samples by measuring the production of the reduced state of the dye. The technique can be used for diagnosis but in addition monitoring a D2HG-associated disease of a patient.

Figure

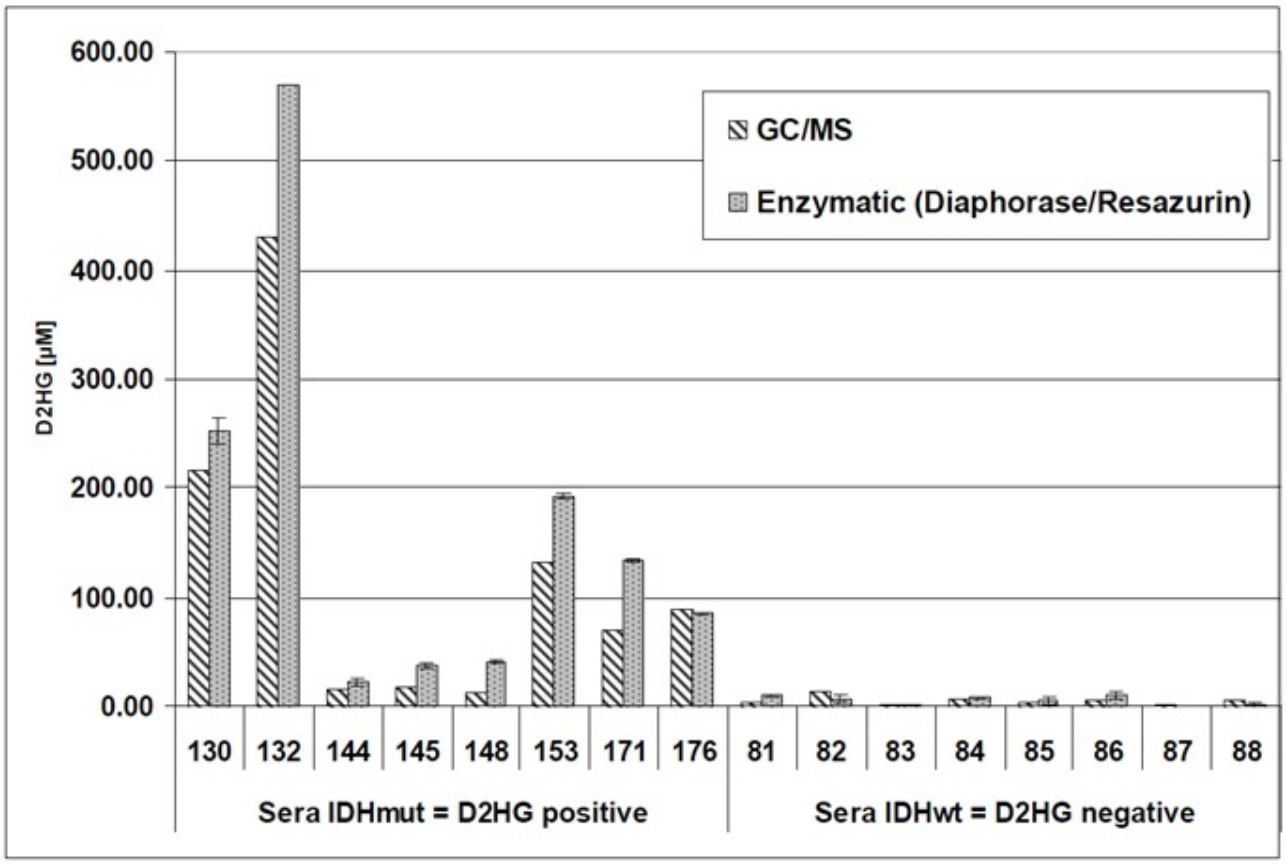

Figure 1: D2HG was diluted in water, blood serum, and urine to get a standard curve (0-375 pmol = 0-15 µM). Samples were prepared according to the protocol in Figure 2 and assayed with the diaphorase/ resazurin read-out. In the graph, the relative fluorescence (RFU) is blotted against the D2HG concentration

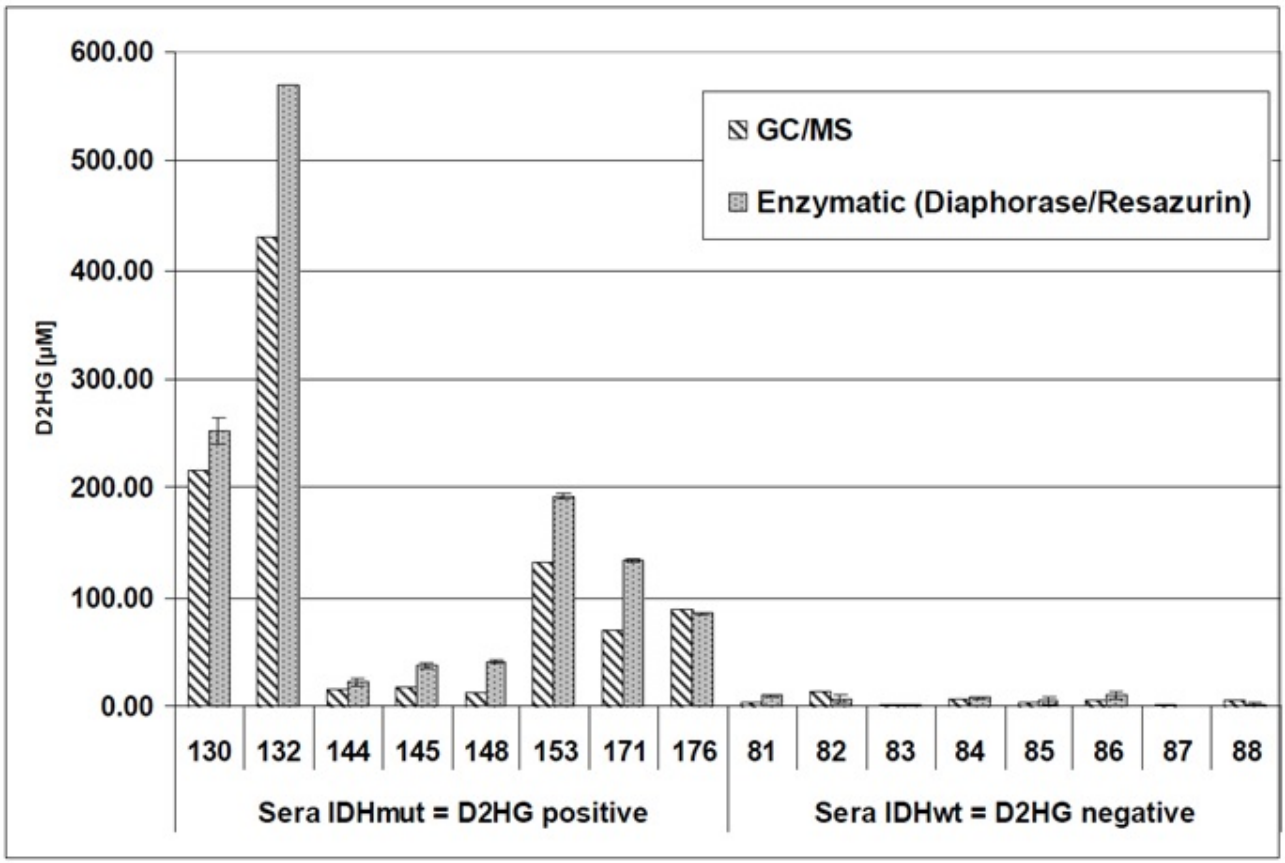

Figure 2: Measurement of sera of patients suffering from acute myeloid leukemia (AML). These patients carry an IDH1 mutation which results in the production of D2HG. Comparison between gas chromatography-mass spectrometry (GC-MS) (single determination) and enzyme assay of the invention using the diaphorase/ resazurin read-out (in triplicate). In comparison, sera of healthy persons who did not carry an IDH1 mutation have been tested. These samples were D2HG negative.

References

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Application area

Development and distribution of a simple and robust enzymatic assays for the specific determination of theD2HG. The readout is available already in about 2 to 3 hours. Moreover, it is suitable for 96-well format and can be even further miniaturized to the 1536-well format, thereby allowing for the parallel analysis (high-throughput) of numerous samples at the same time. Beside an already granted license for research use only, we now seek a licensee for the DIAGNOSTIC field.

Advantages

Diagnosis and monitoring of IDH1/IDH2/IDH3 dependent diseases such as: Glioblastomas, astrocytoma, oligodendrogliomas, oligoastrocytoma, acute myeloid leukemia (AML), chondrosarcoma, intrahepatic cholangiocarcinoma, angioimmunoblastic T cell lymphoma.
Simple and robust enzymatic assay; readout in 3 hours; suitable for 96 up to 1536 well format.
Less expensive/time-consuming and high-throughput possible in opposite to established GC-MS test.

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