

Discovery major step forward in treating leukemia

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Researchers at the University of East Anglia have discovered for the first time a pathway that makes cancerous leukaemia cells resistant to treatment.

The scientists found that death-resistant Acute Myeloid Leukaemia cells are given their resistance by a genetic anti-oxidant pathway called hemeoxygenase-1 or HO-1. This resistance pathway leads to relapse of the disease and non-responsiveness to treatments. When this pathway is inhibited, the cells lose their resistance and become responsive to death-inducing agents.

Published online in the journal *Blood* on Friday January 18, the discovery is the first stage in the development of new drugs that could significantly improve survival rates for leukaemia sufferers.

“This is a major step forward in the treatment of leukaemia and other cancers,” said Prof David MacEwan who led the research team.

“The next step will be a programme to develop a new set of targeted therapies to treat not only Acute Myeloid Leukaemia, but other leukaemias and other cancers.”

Leukaemia is one of the six biggest cancer killers in the UK and more people die of Acute Myeloid Leukaemia (AML) than any other form of leukaemia. AML attacks the white blood cells and is a common form in both children and adults with leukaemia. It is currently treated by a range

of chemotherapy drugs. Many patients go on to have bone marrow transplants due to commonly developing drug-resistance to their initial chemotherapy.

The antioxidant response element (ARE) genes which include HO-1, protect cells from damage and their killing off by cytotoxic agents such as chemotherapy drugs. The team found that drug-resistant leukaemia cells have overactive ARE genes that cause them to be completely resistant to cytotoxic drugs, and that blocking this pathway reverts the cells into responding normally to cytotoxic agents.

Source: University of East Anglia

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