# 'Modular' Leukemia Drug Shows Promise In Early Testing

June 29 2007

A new type of engineered drug candidate has shown promise in treating chronic lymphocytic leukemia in both test tube and early animal tests, a new study shows.

The agent represents a new class of agents called small modular immunopharmaceuticals. Called CD37-SMIP, the agent targets a protein called CD37 on the surface of these leukemia cells.

The study shows that the agent can successfully attach to the protein on the leukemia cells and kill them. The agent works both by triggering the cells' self-destruction and by causing a particular class of immune cells to attack them.

In an animal model, the agent worked equally as well as the drug rituximab, now routinely used to treat chronic lymphocytic leukemia (CLL) patients. Rituximab targets a different protein on leukemia cells.

The study by researchers at the Ohio State University Comprehensive Cancer Center was published online in the journal Blood.

“Our findings have significant implications for the treatment of CLL and related malignancies,” says principal investigator John C. Byrd, director of the hematologic malignancies program at Ohio State 's James Cancer Hospital and Solove Research Institute.

Overall, Byrd says, “the findings indicate that this could be an effective

agent for treating CLL and other malignancies, such as non-Hodgkin's lymphoma and acute lymphoblastic leukemia when they have expression of the CD37 protein."

The laboratory portion of the study used CLL cells from patients, laboratory-grown non-Hodgkin's lymphoma cells and acute lymphocytic leukemia cells.

This research showed that the agent kills leukemia cells directly by triggering their self-destruction through the process of apoptosis.

The study also found that this self-destruction happens differently from how other drugs cause apoptosis. Most drugs cause cells to self-destruct by triggering a cell mechanism that requires enzymes called caspases. This new agent, however, works through a mechanism that does not require caspases.

"This is exciting because it means that this agent may benefit patients who are resistant to other CLL drugs," says co-author Natarajan Muthusamy, a research scientist with Ohio State's Comprehensive Cancer Center. "It also suggests that it might work well in combination with other drugs, as well as alone."

The findings also show that after the agent binds with the cancer cells, it attracts immune cells called natural killer cells, which also destroy the leukemia cells. Funding from the National Cancer Institute, the Leukemia and Lymphoma Society and the D. Warren Brown Foundation supported this research.

Trubion Pharmaceuticals, Inc., developed CD37-SMIP and provided the drug used in the study. Byrd has received no financial compensation from Trubion.

Source: Ohio State University