New drug to benefit cancer patients undergoing chemotherapy

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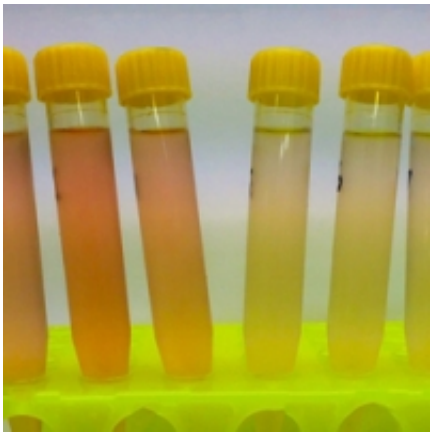

Credit: University of Western Australia

Researchers at The University of Western Australia have developed an innovative approach to prevent one of the most serious side-effects of chemotherapy, known as myelosuppression.

In a study published today in *Science Translational Medicine*, the researchers reveal that myelosuppression can be prevented in laboratory models by a drug called quizartinib. Myelosuppression is caused when chemotherapy kills cells in the bone marrow that produce all our blood cells.

Lead researcher Professor Wally Langdon, from UWA's School of Biomedical Sciences, said myelosuppression caused complications such

as fatigue, dizziness, bruising, haemorrhage and potentially fatal infections.

"This means that patients often need to limit their chemotherapy dosage and frequency in order to avoid these complications, which can then compromise the effectiveness of cancer treatment," Professor Langdon said.

He said current methods of managing myelosuppression were costly and of limited effectiveness.

"This simple approach to prevent chemotherapy-induced myelosuppression has come from research where we discovered that a single dose of quizartinib puts blood-producing cells in the bone marrow to sleep for a short period of time," Professor Langdon said.

"In other words, quizartinib converts these normally flourishing cells into a state of dormancy. We found that this transient period of dormancy provided significant protection to the bone marrow and when the bone marrow cells awakened, at a time when the chemotherapy was no longer active, they resumed their task of producing healthy blood cells."

The researchers found that quizartinib did not put the cancer cells to sleep, and as a result these cells were still eliminated by chemotherapy while the normal bone marrow cells were protected.

Professor Langdon said an important feature of the treatment was that most cancer cells were not affected by quizartinib.

"This means a priming dose of quizartinib before chemotherapy could be used to help treat a wide range of cancers," he said.

"It is hoped that these findings will lead to clinical trials to determine the

extent of the beneficial effects that quizartinib may provide for cancer patients receiving chemotherapy."

More information: Samuel J. Taylor et al. Preventing chemotherapy-induced myelosuppression by repurposing the FLT3 inhibitor quizartinib, *Science Translational Medicine* (2017). DOI: 10.1126/scitranslmed.aam8060

Provided by University of Western Australia