Scientists turn off chemo pain in laboratory

Scientists have successfully turned off the excruciating pain that often accompanies a colorectal cancer drug in an animal model.

Chemotherapy induced neuropathic pain (CINP) is a debilitating side effect that can appear as tingling or numbness in the hands and feet, shooting or burning pain in the limbs, or can feel like hot or cold temperature extremes.

In addition to causing patients suffering, CINP is often a limiting factor when it comes to treatment.

"Thanks to the increased efficacy of cancer treatment, there are nearly 14 million cancer survivors in the US," said Daniela Salvemini, a professor at Saint Louis University in the US.

"Many of these survivors suffer from long-term side effects of CINP, for which there are no proven strategies for prevention or treatment," said Salvemini.

In a study published in the journal Pain, she analysed the platinum-based chemotherapy drug oxaliplatin which is widely used to treat colorectal cancer.

Over 60% of patients who received oxaliplatin develop CINP, and it can last for years after treatment.

Researchers found that the pain pathway associated with this drug was driven by increased expression of an enzyme, adenosine kinase, in astrocytes (a type of central nervous system cell) and decreased adenosine signalling at a key receptor, A3AR.

By supplementing this signalling with A3AR agonists, the researchers were able to block the development of CINP without interfering with the anticancer properties of platinum based drugs.

These findings advance researchers' understanding of pain pathways and provide new information about how drugs may be able to treat chemotherapy pain.

Existing A3AR agonists currently are being studied in advanced clinical trials as novel anticancer agents, researchers said.

The research makes a strong case for evaluating those drugs for use together with oxaliplatin to limit CINP while treating cancer.