



News Release

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Chemotherapy pain could be eased by jetlag drug, study suggests

Painful side effects from cancer medicines could be tackled with a drug that eases the effects of jetlag, research suggests.

The drug – known as melatonin – appeared to prevent pain caused by chemotherapy damage to nerves. It blocked harmful effects on nerve health, the study with rats shows.

Experts say the findings help scientists understand more about ways to limit painful side effects of chemotherapy.

Scientists from the Universities of Edinburgh and Aberdeen focused on a common condition known as chemotherapy-induced neuropathic pain (CINP), which causes tingling and pain sensation to touch and cold temperatures that can be severe enough to cause patients to limit their chemotherapy treatment.

The study showed that melatonin given prior to chemotherapy limited the damaging effect on nerve cells and the development of pain symptoms.

In this study, melatonin did not alleviate pain when CINP had already developed, suggesting that its potential benefits could be as prevention rather than cure.

Importantly, melatonin treatment did not interfere with the beneficial anticancer effects of chemotherapy in human breast and ovarian cancer cells.

Findings also showed that melatonin reduced damage caused by chemotherapy to vital parts of nerve cells known as mitochondria. Experts say reducing harm to these cell energy centres could hold the key to preventing CINP.

CINP affects almost 70% of patients undergoing chemotherapy and can have severe impact on quality of life. Everyday activities, including fastening buttons or walking barefoot, can cause pain that can persist even after the cancer is cured, meaning that some patients are unable to return to work or able to carry out household tasks.

Melatonin is a naturally occurring hormone that controls sleeping patterns, although synthetic versions can be produced in the laboratory. Melatonin can be used to alleviate sleep disturbance but is not available in the UK without prescription.

Prof Helen Galley from the Institute of Medical Sciences at the University of Aberdeen, who co-led the study, said: “These results are promising, especially as melatonin treatment is

known to be safe in other conditions. However, more work will need to be done before we know if melatonin will help prevent pain in cancer patients undergoing chemotherapy.”

Prof Lesley Colvin, pain specialist at the University of Edinburgh, said: "We are actively exploring an early-phase clinical study to see if these exciting laboratory findings might translate to direct benefit for patients undergoing chemotherapy. This is an area of real unmet need, where new therapies are urgently required."

Dr Carole Torsney from the University of Edinburgh’s Centre for Integrative Physiology, who co-led the study, said: “CINP can have a devastating impact on patients, and may limit chemotherapy doses, with potentially serious consequences. These findings are very exciting and suggest that melatonin could prevent CINP by protecting nerve cell mitochondria. Our next steps will be to further test this theory by looking at the effect of melatonin in other pain conditions that also involve mitochondrial damage.”

The study was published in the *Journal of Pineal Research* and was funded by the Association of Anaesthetists of Great Britain and Ireland, *British Journal of Anaesthesia*, the Royal College of Anaesthetists and the Melville Trust for the Care and Cure of Cancer.

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