New study links biomarkers and chemotherapy-related gastrointestinal symptoms

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A study led by University of California, Irvine researchers has revealed a connection between blood levels of omega-3 and the inflammatory

biomarker interleukin-8 and greater chemotherapy-related gastrointestinal symptoms in breast cancer patients. These predictors may offer new targets for pre-treatment therapeutic approaches to preventing or mitigating symptoms.

The findings, recently [published](#) online in the journal *Supportive Care in Cancer*, showed that higher levels of both biomarkers correlated with increased appetite loss during chemotherapy, while heightened interleukin-8 was associated with worsened nausea and vomiting.

"Our research offers valuable insights into how we can proactively address the challenge of chemotherapy-related GI symptoms," said corresponding author Alexandre Chan, UCI chair and professor of clinical pharmacy practice. "We believe the predictive value of biomarkers could pave the way for innovative interventions aimed at improving the overall well-being of all cancer patients undergoing chemotherapy. This study only focused on [breast cancer](#), so it will be important to investigate how these findings extend to other types of cancer."

Chemotherapy agents, designed to eliminate [cancer cells](#), inadvertently cause intestinal inflammation, as well as an imbalance in the gut microbiome, which exacerbates the inflammation.

The [tumor cells](#) themselves release pro-inflammatory chemicals during their destruction of healthy cells, leading to a wide variety of adverse symptoms, including GI toxicities. Essentially, for patients undergoing treatment, inflammation stems from both the disease and the therapeutic intervention.

The research team conducted a secondary analysis of baseline levels of inflammatory biomarkers and plasma levels among 31 female stage 1-3 [breast cancer patients](#) and assessed GI symptoms at the start of

chemotherapy and at least six weeks into treatment.

"Chemotherapy-related GI symptoms negatively affect patients' quality of life and treatment options," said lead author Daniela Arcos, clinical research coordinator in the UCI School of Pharmacy & Pharmaceutical Sciences. "Increasing our understanding of the predictive value of these inflammatory biomarkers is crucial for managing and alleviating the impact of cancer treatment on the gastrointestinal system."

Other team members included Ding Quan Ng, a Ph.D. candidate in the UCI School of Pharmacy & Pharmaceutical Sciences; Yu Ke, a research fellow at the National Cancer Centre Singapore; and Yi Long Toh, a pharmacist at the National University of Singapore.

More information: Daniela Arcos et al, Prediction of gastrointestinal symptoms trajectories using omega-3 and inflammatory biomarkers in early-stage breast cancer patients receiving chemotherapy, *Supportive Care in Cancer* (2024). DOI: 10.1007/s00520-023-08274-5

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