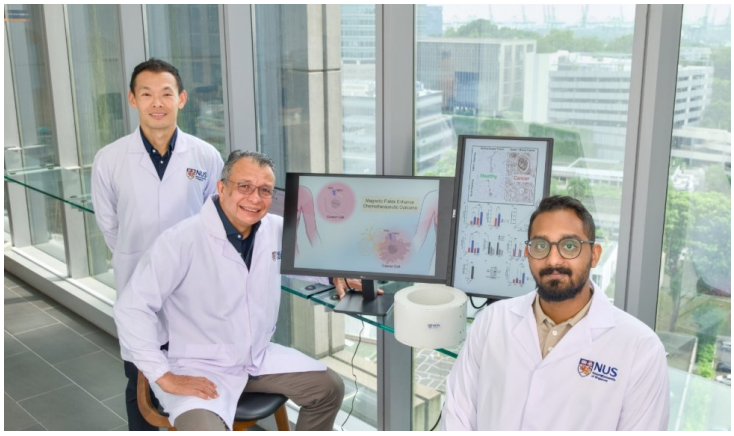
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# Singapore boosts chemotherapy uptake in breast cancer treatment with localised magnetic fields

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**Mechanism by which pulsed electromagnetic field therapy enhances doxorubicin uptake**



Researchers at the National University of Singapore (NUS) have developed a non-invasive method to improve the effectiveness of chemotherapy while reducing its harmful side effects.

By applying brief, localised pulses of magnetic fields, the team demonstrated a significant increase in the uptake of doxorubicin (DOX), a widely used chemotherapy drug, into breast cancer cells, with minimal impact on healthy tissues. This selective uptake enables more precise targeting of cancer cells, potentially improving treatment outcomes and reducing the adverse effects often associated with chemotherapy.

The study is the first to systematically show how pulsed magnetic fields enhance DOX uptake in cancer cells. The team also showed that this approach could suppress tumours at lower drug doses.

The team's research builds on earlier work from 2022, which first revealed that certain cancer cells are more vulnerable to magnetic field therapy.

DOX is a commonly used chemotherapy drug for breast cancer. It works by binding to DNA components and disrupting cell replication and respiration, which then kills off cancer cells. Despite its efficacy, it is a non-selective drug, which means it can also damage healthy tissues, leading to side effects ranging from mild to severe, including cardiomyopathy and muscle atrophy.

"Our approach will be patented and form the foundation for a startup specialising in breast cancer treatment. We are currently in discussions with potential investors in Southeast Asia and the United States to translate this technology from bench to bedside," the researchers said.

*Image caption- Dr Alex Tai (left), Associate Professor Alfredo Franco-Obregón (centre), and Mr Vinesh Krishnan Sukumar (right) from NUS iHealthtech*