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New heat-based approach to cancer treatment can reduce chemotherapy doses: Study

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Method is less invasive and causes fewer side effects



Scientists of Institute of Nano Science and Technology (INST), Mohali, an autonomous institute of Department of Science and Technology have shown that a therapy consisting of combination strategy that uses 17-DMAG, an inhibitor of Heat Shock Protein 90 (HSP90), in conjunction with magnetic hyperthermia-based cancer therapy (MHCT) can improve the effectiveness of heat-based cancer treatments.

The technique could significantly enhance treatment efficacy by reducing the required chemotherapy dosage, serving as an adjuvant therapy that minimises side effects.

The treatment of animal models by administering the combination through intra-tumoural injections, resulted in maximum glioma cell death in a rat glioma model with tumour inhibition rates reaching 65% and 53% at the primary and secondary tumor sites, respectively, within 8 days.

The method is less invasive and causes fewer side effects. The research team demonstrated that magnetic nanoparticles, when exposed to an alternating magnetic field (AMF), can effectively combat tumours. This combined magnetic hyperthermia and chemotherapy (MHCT) approach can reduce the required amount of chemotherapy, making the treatment both safer and more effective. Additionally, the therapy can treat distant tumours without the need for an additional dose at the secondary tumor site, making it a highly effective cancer treatment.

Extensive global research is needed to realise the clinical application of the new therapy, potentially developing an adjuvant or alternative cancer therapy.