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ASIA EDITION

Japan develops cancer therapy using on-site synthesis of anti-cancer drugs

January 10, 2022 | News

The hope is that this type of chemotherapy will become a useful therapeutic platform for the future of cancer treatment



An international research group at the RIKEN Cluster for Pioneering Research (CPR) in Japan has successfully treated cancer in mice using metal catalysts that assemble anti-cancer drugs together inside the body.

The study is the first report of therapeutic *in vivo* synthetic chemistry being used to make anti-cancer substances where they are needed simply by injecting their ingredients through a vein. Because this technique avoids indiscriminate tissue damage, it is expected to have a significant impact on cancer treatment.

The team has developed a method for activating prodrugs using transition-metal catalysis inside the body. When the catalyst is injected into an organism, it usually has no effect because it is destroyed by antioxidants such as glutathione.

“Many patients with cancer are dying because of the side effects of treatment. We believe our technology, which attacks cancer cells highly effectively without side effects, will be able to save lives,” said the researchers. “The method will also allow us to reconsider using compounds that have not been used before because they were too toxic when delivered to the whole body. Now they can be synthesized at the tumor site without affecting healthy tissue. We believe this is a paradigm shift for pharmaceuticals and drug discovery.”