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Nanomedicine: The next big weapon to fight cancer

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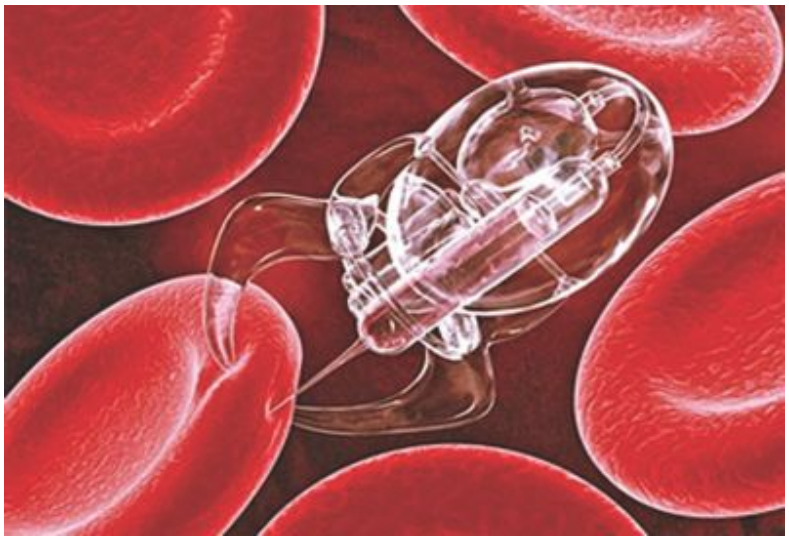

Most cancers still remains as undefeated diseases. Scientists are trying hard to find cure for the cancers, but they are yet to achieve it. Though different therapeutic windows are being considered for cancer treatment such as chemotherapy, radiotherapy and gene therapy, but survival rates of survival are much lower than that of the expectation.

Conventional cancer fighting agents have several drawbacks including higher toxicity, highly expensive and non-specificity.

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Therefore, the major concern of scientists is to overcome those obstacles to enhance the potency of anti-cancer agents.

In this context, a novel technology called nanotechnology is considered as a promising and powerful tool for cancer diagnosis and treatment.

This new technology has several advantages over chemotherapy. It precisely locates the cancer cell and destroys it rather than attacking normal cell. Severe toxic side effects produced by chemotherapy can be bypassed through nanotechnology. For example, a patient is suffering from breast cancer, whenever chemotherapeutic agents/drugs are administered in blood, it is distributed and accumulated not only breast tissue but also in liver cell, muscle cell, lung cells, bone marrow etc. Then it becomes non-specific and can also damage those organs/systems along with destruction of breast tissue.

The nanotechnology which is applying in human body for medical purpose is termed as nanomedicine. The size of this medicine is less than 100 nm in diameter that gives a justification of the name. Several famous research groups from the USA, Japan, South Korea, Australia, the UK, Europe and also India are focusing on nanomedicine to find a cure for cancer. Experts identified it as one of the most promising and prospectus strategies for new generation cancer therapy and early cancer detection.

Multifunctional nanomedicine is another approach recently explored by several research groups. This could be used for multiple purposes including cancer cell targeting, early cancer diagnosis and its treatment. Researchers are thinking that fighting with cancer would be easier through developing of optimised multifunctional nanomedicine.

We may hope and dream that thousand of lives will be safe by inventing nanomedcine sooner or later. However, lots of things should be done to optimise this technique, process and validation are required. To get the nanomedicne in market, clinical trials and final approval from the authorised institution such as US-FDA are required.

The writer is a doctoral research fellow at Korea National University of Transportation, South Korea.

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