

## **Title of the issue: Nanostructured carriers in oncology: State of the art approach and challenges ahead**

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### **Background:**

Cancer is a serious health problem for countries of every size and in every corner of the globe. Approximately 15 percent of deaths every year globally are attributable to cancer (8.2 million totals), but without concerted action the estimated incidence of new cancers is expected to reach about 21.4 million cases by 2030. Cancer is a complex and multistep process which involves numerous changes where impairment in the cell signaling mechanism and apoptosis to be named as a few. The conversion of proto-oncogene to oncogene is responsible for development of abnormal immature group of cells, which is responsible for tumor formation. Molecular heterogeneity (multiphenotype) and adaptive resistance found in various tumor cells, and this makes it more challengeable for its treatment.

### **Aims & Scope:**

Conventional treatment approaches like surgery, radiation, biological therapies (immunotherapy) and chemotherapy are considered to be less effective owing to poor specificity, non-recognition of tumor markers along with dose-related toxicity, poor bioavailability, and risk of damage to the vital organs. Hence, it is the need of the hour to develop new and innovative technologies that will help in prevention of adaptive resistance, identify tumor marker cells and micrometastases with potential ability to destroy the cancer cells only.

**Description:**

Combination of nanotechnology with oncology is a new field of interdisciplinary research, comprising biology, chemistry, engineering and medicine (designing of materials at nanoscale levels to create products that exhibit novel properties), which have profound impact on disease prevention, diagnosis and their treatment. Multifunctional nanoparticles are the novel technological innovations developed recently to fight against the cancer. This is the most effective approach to recognize the molecular heterogeneity and adaptive resistance in cancer cells. It reduces the problems associated with conventional therapy with respect to diagnosis, imaging and real-time controlled drug release, followed by reduction in toxicity, thus making the duration of chemotherapy quite shorter. In this context, the present issue of the journal aims to provide an extensive account on the progress of nanocarriers or nano-theranostics with their clinical applications in cancer treatment. In addition, the articles in the issue will focus on accounting the credibility of patent literature on the nanostructured systems with potential applications in cancer. Moreover, the key challenges and issues with nanotheranostics would also be taken into consideration for their toxicity hindering the clinical applications.

**Details about the articles**

Title no: 1: Metallic nanoparticles in cancer therapy

Title no: 2: Carbon based nanotheranostics for effective treatment of cancer

Title no: 3: Polymeric nanomedicines for treatment of cancer

Title no: 4: Lipid based vesicular carriers for effective treatment of skin cancer

Title no: 5: Role of Liposomes in cancer treatment

Title no: 6: Role of solid lipid nanoparticles in cancer therapy

Title no: 7: Role of nanomedicine in treatment of brain cancer

Title no: 8: Nanolipid carriers in effective treatment of cancer

**Time frame:**

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