Title: Photodynamic Therapy and Hyperthermia as Promising Areas of Scientific Research in Modern Experimental and Clinical Oncology

Tzerkovsky Dmitry
(Guest Editor)
N.N. Alexandrov National Cancer Center of Belarus,
223040, Lesnoy,
Republic of Belarus
E-mail: tzerkovsky@mail.ru

Proposal

Malignant tumors are a serious health and social problem. The main methods of treatment in oncology are the surgical intervention, radiotherapy and chemotherapy. Despite the obvious achievements of medical science, at the moment the active use of alternative methods of treatment of malignant tumors is an urgent issue. One of such directions is sono-photodynamic therapy (SPDT) and hyperthermia (HT).

SPDT, which is a treatment method based on the significant increase of the cytotoxicity of drugs combined with ultrasound and photoirradiation of the tumor tissue. Sono-photochemical reactions include a direct interaction of excited molecules with help of ultrasonic and photoradiation, photosensitizer on the substrate. Interaction initiates a complex cascade of free radicals, causing the development of oxidative stress syndrome. As a result, SPDT effectively induced tumor-cell apoptosis and necrosis, and tumor death.

HT is a procedure, which raises the temperature of tumor-loaded tissue to 41-47ºC and is generally applied as an additive treatment to established non-surgical cancer treatments (chemotherapy and radiation therapy). High temperatures can damage cancer cells, usually with minimal injury to normal tissues. HT is almost always used with other forms of cancer therapy and may make some cancer cells more sensitive to radiation and chemotherapy. A number of studies have demonstrated the antitumor efficacy of HT in combined (complex) treatment regimens on the treatment of many types of cancer (sarcoma, melanoma and cancers of the head and neck, kidney, brain, esophagus, breast, bladder, cervix and other). These studies have shown a significant reduction in tumor size and increased survival in patients when hyperthermia is combined with other treatments.

We invite authors to submit original studies, as well as review articles to this special issue, which will be devoted to the discussion of the use of photodynamic, sono-photodynamic therapy and hyperthermia of treatment of malignant tumors.

Potential topics include, but are not limited to:

1. new experimental methods of treatment of malignant tumors;
2. application of photodynamic (sono-photodynamic) therapy in experimental and clinical oncology;
3. application of local and whole-body hyperthermia in experimental and clinical oncology;
4. discussion of the mechanisms underlying the antitumor effect of photodynamic (sono-photodynamic) therapies with various photosensitizers, and local and whole-body hyperthermia.

Further you are requested to forward this invitation among your colleagues who are specialized in this field.

Before submission of full manuscript the authors should carefully read the journal's Author Guidelines, which are located at *http://www.lifescienceglobal.com/publish-with-us/guidelines-for-authors.*