Technology offer

Lanthanide-Enhancers in the Radiotherapy of Cancer

Description

In Germany alone every year about 400,000 people develop cancer. The radiation therapy is widely used as a method of treatment. Cancer cells will be harmed more, because they are more sensitive than healthy cells to ionizing radiation. Nevertheless to reduce the cancer cell growth, significantly high doses of radiation have to be used. But this leads to unwanted side-effects. Locally acting enhancers can increase the radiation, so that the cumulative dose is reduced and at the same time the ionizing effect in the tumor tissue itself is increased. Furthermore the radiation enhancer should not be toxic for the healthy tissue.

The invention uses lanthanides compounds, which are coupled to biodegradable lactic acid polymers and intensify radiation. The problem of unintended polymer accumulation in the body is avoided by the nanoparticles’ biodegradability. These particles can be introduced locally in the tumor tissue. For the radiation-potentiating effect neutron radiation is not necessary. It is sufficient to use photon radiation, which is produced by X-ray machines. These machines exist usually in doctor’s surgeries, so that more widespread application of radiation enhancer is possible.

Application

The lanthanide radiation enhancer can be disposed in all cancer treatments, which use radiation therapy. They ensure a more efficient combat against the tumor tissue by local enhancement of the radiation in the tumor and thus a lower burden for the patient through a reduced cumulative dose.

Advantages

• Increased efficiency: locally increased radiation dose, decreased cumulative dose
• X-rays applicable
• The lactic acid polymer PLGA is an approved adjuvant for pharmaceutical applications
• PLGA-coupled lanthanide nanoparticles are biodegradable

Status of development

• Meaningful tests based on cell cultures

Patent situation

European patent application, international patent application possible

Rights available

Exclusive or non-exclusive licenses plus options on licenses.

Additional Information

IMG Innovations-Management GmbH
c/o Universitätsmedizin Mainz
D. Marcus Kaltwasser
Obere Zahlbacher Straße 63
D – 55131 Mainz
Tel: +49 (0) 61 31/17-97 70
Fax: +49 (0) 61 31/17-99 54
Email: kaltwasser@img-rlp.de
Internet: www.img-rlp.de

Our reference: UMZ283