

P-0015/TEC-0040

Device preventing the dissemination of tumor cells along the needle tract in cancer biopsies using standard biopsy needles and practice.

BACKGROUND

Biopsy procedure implies some risks for patient's health as it can result in inadvertent adverse effects and complications. One of these potential complications is *needle-tract seeding* which refers to the implantation of tumor cells by contamination when instruments, such as biopsy needles, are employed to examine, excise or ablate a tumor. This occurs because tumor cells are dragged when the needle is pulled out or because of tumor cell migration through the needle tract. Needle tract seeding of tumors after biopsy is a very rare phenomenon but its consequences are very relevant from a clinical point of view. Different strategies for preventing the phenomenon had been proposed: to excise the tissue surrounding the needle track, the use of thermal energy for cauterization of the needle track, etc. However, the suggested techniques implying heat bear some drawbacks.

THE TECHNOLOGY

Here, as alternative solutions, it is proposed to make use of Electrochemical Treatment (EChT). The device consisting in a current generator that is connected to the needle and a superficial electrode. The electric current creates a toxic environment around the needle effectively preventing the dissemination of tumor cells dragged along the tract at the extraction of the needle. Such toxic microenvironment will not only prevent dissemination of cells adhered to the needle but it will also minimize the chances of post-treatment neoplasm implantation or infection by convection or migration as the needle-tract environment will remain toxic for some time. In particular, EChT seems very promising as it will not cause muscular stimulation (as IRE does) and it is a technique that has been employed for tumor ablation in a large number of patients.

ADVANTATGES

- Technology adaptable to standard existing biopsy equipment.
- Device includes only standard electrical equipment.
- Level of discomfort for the patient is minimal or non-existent.

STATE OF DEVELOPMENT

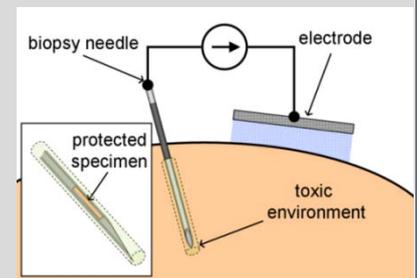
Feasibility of the method was initially tested by performing computer simulations and later in vitro tests have been carried out which support the efficiency of the system for achieving in situ sterilization. We are preparing the development of in-vivo studies.

INTELLECTUAL PROPERTY

A patent application covering the device had been granted at the Spanish Patent Office (OEPM) and a PCT application is pending. A very positive Search Report was obtained from the patent office for the application.

MARKET OPPORTUNITY

The largest indications for biopsies are suspected breast and prostate cancer, where needle-tract seeding effects have been identified and quantified. In monetary terms, only in Europe the market for biopsy devices reached \$270m in 2007 and is estimated to hit \$370m by 2014 according to Frost&Sullivan.



COMMERCIAL OPPORTUNITY

Technology available for licensing with technical cooperation

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KEYWORDS

Biopsies, needle tract seeding, tumor implantation, electrochemical treatment.

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