Alpha-immunotherapy

Fact Sheet

Project Information

Grant agreement ID: 1958

Start date

End date

Funded under
Programme for research and technological development, including demonstration, to be carried out by means of direct actions for the European Community by the Joint Research Centre, 1998-2002

Total cost
No data

EU contribution
No data

Coordinated by
Institute for Transuranium Elements
Germany

Objective

Specific Objectives:

1. Achieve a sufficiently qualified Ra-226 target production and post-irradiation chemical processing (Ac-225/Ra-226 separation and purification) to allow regular irradiation (e.g. bi-monthly) of about 30 mg Ra-226 (each time) at the cyclotron at FZK to produce Bi-213 generators for ongoing pre-clinical and clinical trials in Europe and US;

2. Succeed in obtaining a license agreement with an external company to take over the long term / large scale Ac-225 production including the use of ITU facilities and training by ITU experts in the first phase of the exploitation;
3. Provide scientific support to the hospitals carrying out trials on Non-Hodgkins lymphoma, prostate cancer, stomach cancer and multiple myeloma;
4. Promote further the application of this new cancer therapy by organising a 1 or 2 day dedicated alpha-immunotherapy symposium at ITU in 2002.
Planned Deliverables:

Specific deliverables to DGs:

- DG Entr : 1 shared cost action to be finalised in 2002 focussing on the pre-clinical and clinical testing of Bi-213;
- Research DG : Proposal in preparation for new shared cost action with medical partners throughout Europe on pre-clinical and clinical testing of different constructs using Bi-213 and At-211 in the hospitals;
- JRC : Close involvement of JRC Headquarters in assessment of licensing possibilities through e.g. Agreement of prior opportunity (Alpha-immunotherapy serves as kind of test case).

As a result of the research:
- Publications;
- Patents;
- Pre-clinical and clinical protocols;
- Workshop proceedings.

Summary of deliverables made by: 31/12/2001
- Through a series of earlier technological achievements, the irradiation of 30mCi targets of Ra-226 in the FZK cyclotron was continued. The main achievement has been reached by carrying out the full process including 50 hours irradiation with 50microA current;
- To overcome radiolysis problems when separating Ac-225 from Ra-225 with a cation exchanger, and to reduce the separation time and volume, a new separation method was developed. The advantages of the process are small elution volume, short separation time and high purity of the product;
- Two new potential chelates for actinium have been developed. The in vitro binding tests have shown excellent binding properties and in vivo stability tests are planned to start at the begin of the year 2002;
- Preclinical testing of Bi-213 continues in collaboration with a network of European hospitals;
- In April 2001 started a phase I study with Bi-213 labelled CD-20 antibody in the German Cancer Research Centre in Heidelberg. Nine patients having different B-cells malignancies (mainly Non-Hodgkin's lymphoma and multiple myeloma) have been treated with dose levels 15, 30 and 45mCi. Even in highest dose level not any

toxicity was observed, only a light myelosupression, which is typical for this kind treatments. Dose escalation is planned for 2002. Due to the nature of the test and type of cancer, no prognosis can be made on the healing. In the Kantonspital Basel were treated two patients with glioblastoma during year 2000. The second patient has stable disease after more than one year follow up. Based on these encouraging result new trials involving several patients are planned for 2002.

Output Indicators and Impact

Global output: 3 publications in refereed journals and 3 conference participations.
Summary of the project:

The objective of the work is to develop, test and validate a drug against different types of cancers, consisting of a suitable alpha-emitter, a cancer specific carrier (antibody, peptide) and a chelator (combining nuclide and carrier). For this purpose ITU focusses on:
- the validation of enhanced production processes for the required radionuclides;
- the development of appropriate chelators;
- the continued supply of the requested radioactive materials to the European hospitals investigating this new therapeutical approach;
- the increase of safety and improvement of quality for using alpha-emitting isotopes at the hospitals by automation of the required manipulations.

Rationale

Cancer continues to be one of the major preoccupations of the European citizen and one of the great challenges for research. During the Fourth Framework Programme ITU has promoted, in cooperation with university hospitals, the development of a new type of cancer therapy based on the use of alpha-particle emitting nuclides. The technology is a spin-off of the research programme on actinides.

The Institute for Transuranium Elements makes its facilities and expertise in handling highly radioactive alpha-nuclides available to develop and test suitable alpha-emitting immuno-conjugates for cancer treatment. Many hospitals in the European Union have started specific cancer treatment programmes and have requested the supply of nuclides to embark in such programmes. Since ITU specialises in handling highly radioactive actinides, it is an appropriate place for this type of work.

Fields of science (EuroSciVoc)

medical and health sciences > clinical medicine > oncology > **prostate cancer**

natural sciences > physical sciences > theoretical physics > particle physics > **particle accelerator**

natural sciences > biological sciences > biochemistry > **biomolecules**

social sciences > sociology > industrial relations > **automation**

natural sciences > chemical sciences > nuclear chemistry > **radiation chemistry**

Programme(s)

FP5-JRC - Programme for research and technological development, including demonstration, to be carried out by means of direct actions for the European Community by the Joint Research Centre, 1998-2002

Topic(s)

M01 - Serving The Citizen

S08 - medical and health applications

P05 - Safety of Food and Chemicals

Call for proposal

Data not available

Funding Scheme

JRC - Joint Research Centre research

Coordinator

Institute for Transuranium Elements

EU contribution

No data

Total cost

No data

Address

Karlsruhe
Germany

Last update: 2 October 2002

Permalink: https://cordis.europa.eu/project/id/1958