**CONTRACT 89323 (Internal SUBI number for reference purposes)**

**Search of criteria of elevated risk of development of radiation-induced tumors and ways of their modification»**

Performance period: 1989-1992

**Publications**

Scientific research report (final). Principal investigator К.N. Muksinova, principal executive Е.N. Kirillova, ex. V.P. Aristov et al. – FIB-1, 1992. – Inv. no 2014. – 108 p., 20 tables, 65 references. Contract materials were sources for 37 papers, of them– 31.

**Background**

The information was gathered from 1058 male Wistar rats that were used in SUBI’s experiment no. 89323. The collection and collation of the information was done as part of Task 2.3 (“Evaluation of the SUBI tissue archive and database as a potential part of the European archive”) of the previous EURATOM-funded project STORE (Sustaining access to Tissues and data frOm Radiobiological Experiments; contract number 23228), which was coordinated by BfS, Germany (see <http://cordis.europa.eu/project/rcn/89386_en.html>) .

The information given here is based upon SUBI’s 18 months and 42 months reports.

It has been shown in the STORE project, that the biological material from the experiments conducted by SUBI can still be used. The respective Standard Operating Procedures are available on the STORE website (<http://www.storedb.org/store_v3/documents.jsp> ).

**The study**

The aim of the study was to develop information factors to predict radiogenic malignant tumors in male Wistar rats, as well as approaches to prevent development of tumor and non-tumor effects of ionizing radiation.

Course of effect of incorporated Pu inhaled (Pu-239 polymer-nitrate) or administrated in blood (polymer-nitrate or monomer-citrate), as well as tritium oxide at various periods of chronic effect was used to study:

* Sensitivity of pluripotent haematogenic progenitors (СFCс-11) and osteogenic and stromal cells progenitors (committed myeloid progenitors CMP) compared to myelocariocytes to 239Pu α-emission at different routes of body intake;
* Minimal effective dose of red bone marrow СFC and CMP damage*;*
* Content of myelocariocytes in different bones and blood cells*.*

Connection between depth of steogenic and stromal cells progenitors damage at early dates and frequency of Pu-induced osteosarcomas was established; high information content of bone marrow reserves was experimentally justified to estimate individual sensitivity to radiation leucogenic effects. Dose-response increase of lung cancer frequency at Pu inhalation was proved, possibility of pharmacological preventive treatment for 239Pu-induced malignant tumors was established.

State of bronchopulmonary immunity was studied in case of Pu polymer nitrate inhalation intake and systemic immunity in case of intake with blood flow. The paper presents results obtained in the course of study of 239Pu polymer nitrate late effects at inhalation intake (lifespan, frequency and spectrum of malignant neoplasms). Lung tumors made 75-90% of all ascertained tumors in different groups of exposed animals. Possibility was stated to prevent development of Pu-induced malignant neoplasms by pharmacological means.

Biological material was available for 1058 male rats, from which 787 rats and 20380 tissue samples could be identified. The rats were used for studying late effects after a single intravenous (239Pu polymer-nitrate, 239Pu citrate) or inhalation (239Pu polymer-nitrate) administration.

For the remaining 271 rats the identification of biomaterial could not be completed.

**Contact information**

If you want to use the material or have any detailed questions regarding the study you should contact SUBI through [inter\_dep@subi.su](mailto:inter_dep@subi.su). If you have any questions regarding this short summary report, please contact Dr. Bernd Grosche ([bgrosche@t-online.de](mailto:bgrosche@t-online.de)).