**CONTRACT 75311 (Internal SUBI number for reference purposes)**

**«Tritium oxide effect on DNA of animal tissues structure and metabolism»**

Performance period: 1975-1977

**Publications**

Scientific research report (final). Principal investigator V.V. Kreslov, principal executive G.S. Mushkachyova, G.G. Rusinova, executive V.S. Revina et al. – FIB-1,1977. – Inv. No. 1105. – 68p., 15 tables, 20 fig., 26 references. Contract materials were sources for 9 papers (1 manuscript, 8 publications).

**Background**

The information was gathered from 1224 male Wistar rats that were used in SUBI’s experiment no. 75311. 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 42 months report.

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**

Study population: 276 female rats

Exposure: Single oral intake of tritium oxide, external gamma radiation, control

Outcome of interest:

* DNA function and structure during 37 days after single oral intake of tritium oxide
* kinetics of tritium body clearance
* average lifespan and late effects.

**Results**

Changes in biosynthesis rate and content of nucleic acids, activity of DNA degradation ferments were noted. By DNA single-stranded break criteria relative efficiency of tritium oxide and γ-radiation was estimated. Tritium oxide administration (absorbed dose 11.4 Gy) resulted in reduction of average lifespan (419 days) compared to intact control (699 days) and increase of tumors mainly due to malignant neoplasms.

**Biological material**

Biomaterial is available from 221 rats as 2854 paraffin-fixed samples. The preparation method is described in STOREDB File 10865, accessible through <http://dx.doi.org/doi:10.20348/STOREDB/1041/1070> .

2805 samples from 181 rats are related to experiments on late effects of tritium oxide and external γ-radiation (see Table 1).

49 samples from 40 rats are related to the experiment on dynamics of intestines cell elements damage in tritium tests (37 rats, 46 samples) and in control (3 rats, 3 samples). The samples contain material obtained after 3, 6, 12 and 24 hours (3НОН) and 6, 12 hours (control).

**Contact information**

If you want to use the material 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)).

**Contract 75311 – Table 1: Quantitative assessment of biomaterial from rats**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Group | Different exposure factors | | | | | | | Number of rats, ♂ | |
| Ionizing radiation (IR) | | | | | | Other factors | Used in test,  Lp | samples  (paraffin) |
| type | source | Delivery route | Dose approach | Administered amount | Dose,  Gy | Characteris  tics |
| 1  test | β | 3НОН | per os | single | 0.6 kBq/kg  body mass  (22.2 MBq/g) | 11.4 | none | 101 | 885 |
| 2  test | γ | 137Cs | external | single | none | 6.4 | none | 86 | 1884 |
| 3  control | none | none | none | none | none | none | none | 89 | 36 |