

**CYTOGENETIC MONITORING OF MAMMALS
OF SEMIPALATINSK TEST SITE**

R.Zh. Zhapbasov

Institute of General Genetics and Cytology MS-AS RK, Almaty

V.I. Tusupbaev, K.S. Karimbaeva, A.T. Seisebaev

Institute of Radiation Safety and Ecology NNC RK, Kurchatov

K.G. Nurgalieva, C. Chenal

Regional Cancer Centre, University of Rennes, France

**ЦИТОГЕНЕТИЧЕСКИЙ МОНИТОРИНГ МЛЕКОПИТАЮЩИХ
СЕМИПАЛАТИНСКОГО ИСПЫТАТЕЛЬНОГО ПОЛИГОНА**

Жапбасов Р.Ж.

Институт общей генетики и цитологии МН-АН РК, г. Алматы

Тусупбаев В.И., Каримбаева К.С., Сейсебаев А.Т.

Институт радиационной безопасности и экологии НЯЦ РК, г. Курчатова

Нургалиева К.Ж., Шеналь К.

Реннский университет, Франция

The cytogenetic monitoring of the natural populations of mammals living under conditions of environment radioactive contamination is the simplest method to study the genetic consequences of nuclear tests.

This work presents the preliminary results of the cytogenetic monitoring of the natural populations of rodents (*Allactaga major* Kerr., *Allactaga saltafor* Eversm., *Citellus erytrogenus* Brandt) and domestic sheep (*Ovis aries*).

The exposure of gonads is considered to be the most hazardous among the consequences of the chronic ionizing exposure since the exposure of gonads can cause not only somatic damages but also hereditary ones transferring to the further generations.

The genetic damage assessment of rodent reproductive cells was performed using the morphological test for abnormal form of the sperm head. It is generally accepted, that spermatogenesis disorders, which result in abnormal spermatozoa, are bound to the genetic disturbances during mitotic and meiotic division stages of male sex cells.

The analysis of data obtained shows that the rodent males living on the radioactive contaminated sites (Balapan, Degelen) have the higher numbers of abnormal spermatozoa. So, the *Allactaga major* taken from the sites with the gamma background of 250 μ r/h showed the frequency of abnormal spermatozoa within 48.27 - 62.73 %. This value for the control animals from the gamma background of 11 - 16 μ r/h did not exceed 5.8 %.

The most objective and sensitive method for assessment of environmental contamination genetic consequences for the natural populations is to determine the damages of the cell genetic apparatus, e. g. the frequency of the visible changes in chromosome number and structure.

The cytogenetic study of animals showed that the significant number of marrow cells of rodents and sheep living on the technical fields of the Test Site are the metaphase cells with polyploid (0.98 - 3.50 %) and aneuploid (11.03 - 19.72 %) chromosomal sets. There were also found the structural disturbances of chromosomes such as single and coupled fragments.

The data obtained confirms that the radiation level on the investigated territory of the Test Site are the dangerous ones as far as genetic consequences are concerned.

* * *