or when the results of conventional dosimetry are not available (e.g. in accidental circumstances). The use of EPR dosimetry, as an essential tool for retrospective assessment of radiation exposure is an important part of radioepidemiological studies and also provides data to select appropriate countermeasures based on retrospective evaluation of individual doses. Despite well established regulations and protocols for maintaining radiation protection dose limits, the assurance that these limits will not be exceeded cannot be guaranteed, thus providing new challenges for development of accurate methods of individual dose assessment.

EPR consists of the resonant absorption of electromagnetic energy at electron-spin transitions. A static magnetic field should be applied to resolve different electron-spin levels. Unpaired electrons of free radicals have spin equal to ½. In a magnetic field there are two magnetic levels, +½ and –½ with different energies. The transition between two these levels is possible under following resonance condition:

$$h\nu = g\mu_B B$$

where ν is resonance frequency, h is Plank's constant, g is the g-factor, μB is the Bohr magneton, and, B is the magnetic field induction.

The device for EPR registration is called an EPR spectrometer. Today, EPR dosimetry is a leading method for retrospective dosimetry of individual radiation exposures. The EPR method have its own advantages and disadvantages.

The pluses are:

- measuring of the volume of samples;
- dose reconstruction in distinctive tissues;
- dose reconstruction after long periods of exposure;
- dose reconstruction for many years after the exposure.
- And the minuses are:
- the difficulty in collecting material for analysis;
- reconstruction of the individual dose is complicated and labour-consuming.

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PROTON AND ELECTRON ACCELERATORS IN THE TREATMENT OF ONCOLOGICAL DISEASES

At present electron and proton accelerators are widely used in the diagnostics and treatment of cancer. There exist electron and proton therapy. The former is applied in the treatment of superficial or subcutaneous diseases (skin cancer, clay pipe cancellation, intraoral cancer, cervical carcinoma, breast cancer), while the latter is more universal since it allows to work at any body depth (eye melanoma, brain tumor, cancer of the head and neck, spinal cord tumor, lung carcinoma, a tumor in the skull base, prostate cancer, pituitary cancer, liver cancer). The basic advantage of

proton therapy in comparison with electron therapy is that the major energy losses occur in the last millimeters of the proton run, before stopping (the Bragg peak). Location of the Bragg peak depends on the energy to which the particles were dispersed in an accelerator. Thus, by varying the energy of the protons, you can achieve maximum energy throughout the depth of the tumor with minimal damage to healthy tissue. This is especially important in the treatment of pediatric patients as possible to reduce the radiation exposure to the growing and developing tissues.

Accelerators which are used in medicine could be conventionally divided on two kinds. The first kind consists of accelerators that produce medical radioisotopes for the diagnostics of various organs and tissues. The second kind deals with accelerators that are exploited in direct treatment of cancer.

In this work we consider the operation principles of accelerators, their advantages and disadvantages as compared with other methods of cancer treatment. The review of accelerators operating in Belarus and Russia is also given.

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PRAYING MANTID (MANTIS RELIGIOSA) IN BELARUS

The present time is characterized by an ecological trouble, one manifestation of which is the presence of invasive species, which substitute and even displace aboriginal species.

The analysis of literary sources on the problem of invasive species has shown that in recent years the praying mantid (Mantis religiosa) has been settled throughout the territory of Belarus. Its appearance is caused by climate change and the drying melioration of the Belarusian Polesye. As is known, low-lying swamps transformed in the process of drainage have ceased to serve as a barrier to the penetration of alien species. It has caused the penetration of steppe, semi-desert and even desert species including the praying mantid in the southern part of Belarus.

Objective: to trace the dynamics of the praying mantid settlement in Belarus and peculiarities of its biology under laboratory conditions.

1. To carry out the analysis of literature on the problem of invasive species.
2. To reveal habitats of the praying mantid in Belarus.
3. To reveal the phenoshape of the praying mantid from different habitats.
4. To study the trophic relationships of the praying mantid under laboratory conditions

Data on the distribution of the praying mantid throughout the republic have been obtained and analyzed. The first mention refers to the end of the 90 's, last century. In the XXI century the emergence of the praying mantid was registered as single individuals on the territory of the Polesye Radiation Reserve (near Babchin) in 2008, 2010. Currently it is widespread everywhere in the Republic. The latest find was registered in the north of Belarus (near Bercovichi). The greatest number of