To identify some DNA fragments in an organism's genome, radioautographic methods, such as dot- and blot-hybridization are frequently used. As a rule, genomic DNA is first isolated from the plant's organ. Its purification and subsequent manipulation is followed by hybridization with a probe labeled with radioactive components. The purified DNA, cDNA of RNA reverse transcription or a DNA fragment cloned in *E-coli* could serve as the probe. Radioautography shows homologically hybridized fragments.

We have performed express dot-hybridization analysis on hybrid plasmid transformation of *G.Hirsutum L.* (108F) and *G. Barbadense L.* (C-6037) cotton sorts. pCaVItoxneo plasmid obtained on the basis of independently replicated plasmid-like DNA of the *G.Hirsutum L.* (pGHm2) cotton mitochondria was used (Yusupov T., 1994). There are hybrid two-domain gene of insectotoxin and enzymatically active kanamycine - phosphotransferase in the plasmid. The whole content is controlled by the plant promoter of cauliflower mosaic virus (19 S SFMV). The plasmid in question was added to the pollen sprouting medium followed by the transfer of the suspension on the pistil stigmas of the pre-prepared cotton flowers. The seed budding as the result of the experiment were analyzed by means of dot-hybridization method.

DNA probes used for radioactive hybridization were labeled by method of Fainberg and Vagelstein (1990). To perform that DNA was dissolved in Tris-EDTA (10:1), containing 10mM of Tris HCl and 1mM EDTA, denaturated at 100°C for 2 minutes with subsequent addition of oligonucteotide primers and annealing. DNA synthesis in the presence of ^{32}P labeled dATP and dCTP (Tashkent) was performed in the reaction mixture of potassium-phosphate buffer containing 67mM of $MgCl_2$, 1 mg/ml of BSA, 1mM methyl ester, 0.5mM of GTF and TTF, 10-20 mkCu of dATF and dCTF labeled with ^{32}P, 2.5 Units of activity of Klyonov's fragment (DNA polymerase I). Radioactive phosphorous inclusion percent was determined by means of following successive washing of filters from the labeled mixture with phosphate buffer and ethanol.

As the result of 20 *G.Hirsutum L.* and 44 *G. Barbadense L* plants grown from the experimental seeds 12 and 25 versions of positive dot-hybridization signals were respectively obtained. This is to be the evidence for integration of hybrid plasmid into the genome of experimental plants. The subsequent generation DNA was treated with the Hind III and BamH I restriction fragments to perform blot-hybridization.

Thus, radioautography has been found important for analysis of genome of experimental plants without signs morphologically manifested.

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ABOUT NEUTRON CAPTURE THERAPY METHOD DEVELOPMENT AT WWR-SM REACTOR IN INSTITUTE OF NUCLEAR PHYSICS OF UZBEKISTAN ACADEMY OF SCIENCES

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Neutron capture therapy (NCT) is developing method of swellings treatment, on which specialists set one's serious hopes, as at its realization the practical possibilities of the effect on

any swellings open. The essence of method is simple and lies in the fact that to the swelling enter preparation containing boron or gadolinium, which one have a large capture cross-section of the thermal and slow neutrons. Then the swelling is irradiated once with the slow (epithermal) neutron beam with fluency about 10^9 neutrons / cm^2s for a short time and single. As a result of thermal neutrons capture by the boron (or gadolinium) nuclei secondary radiation which affecting swelling cells is emitted.

NCT of oncologic diseases makes the specific demands to physical parameters of neutron beams. Now research reactors are often used for NCT. However, research reactor WWR-SM (INP, Uzbekistan AS, Tashkent) doesn't provide with the epithermal neutron beams and to develop this technique the reactor, first of all, needs for obtaining the epithermal neutron beams with energy spectrum in range from 1 eV up to 10 keV and with intensity ~ 10^9 neutron /cm^2·s. Practically it is connected with upgrade of at least one of existed reactor channels, namely with equipping with the special equipments (filters), forming from the reactor spectrum the beam of necessary energy neutrons. It requires realization of preliminary model calculations, including calculations of capture cross-sections, of filters types and their geometrical parameters on the basis of optimal selected materials. Such calculations, as a rule, are carried out on the basis of Monte-Carlo method and designed software for calculation of nuclear reactor physical and technical characteristics [1].

In this work the calculation results of devices variants and problems discussion, related with possibility of WWR-SM reactor using for NCT are presented.

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DETERMINATION OF BROMINE AND ACCOMPANYING ELEMENTS IN HYDROMINERAL RAW MATERIALS BY INSTRUMENTAL NEUTRON ACTIVATION TECHNIQUE

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At present the important problem is to find new sources of mineral raw materials. Among them underground waters can be the source of most industrial-valuable and rare elements (I, Br, Sr, Cs, Rb, B, Li and others)

Previously, we have developed the method for determination of iodine in hydromineral samples by using neutron activation analysis.

In present work we have developed the method to determine the bromine and other accompanying elements in hydromineral raw materials. The bromine is also important element after iodine in hydromineral raw material. The bromine is determined by radioisotope ^{82}Br, $T_{1/2}$ =1,47 days, E_γ=554,3 keV.