

The complex of the developed phytocompound, *Spirulina platensis* and *mumiyo* is suggested for the treatment of children diseased with diabetes mellitus.

Received preliminary results show that the phytotherapy during the traditional treatment results into decrease of blood sugar level at children with diabetes mellitus, what in its turn will allow to reduce the dose of insulin injected from outside.



UZ0502720

APPLICATIONS OF NEUTRON ACTIVATION ANALYSIS IN AGRICULTURE OF UZBEKISTAN

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Soil is one of the main components of biosphere, which is subject to Man's economic activity from year to year. Unfortunately, during last 50-60years it became an object of the chemization (the treatment of crop by poison chemicals and the usage of mineral fertilizers). Thus, definite pre-conditions are created to migrate to substances applied along the soil horizon. These substances fall into organism of Man and animals through soil-contacting media: plants, air, water.

In this respect the instrumental neutron-activation techniques which allows determination of about 40 chemical elements in soils and other objects of environment, with detection limit equal to 0.001-10.0mg/kg and not more than 30% uncertainty, are provided with the Ge – detector (the Camberra firm).

The report discusses some metrological points of INAA concerning the objects of environment, in particular, the influence of space-time non-uniformity of chemical element distributions on the reliability of analysis results.

The elaborated techniques make it possible to:

- establish the elemental composition of soils, cotton, natural waters, mineral fertilizers, aerosol dust of near land layer of various climatic zones of Uzbekistan, including the airs around the Aral sea.
- study of the interrelation between the soil elemental composition and the chemism in the evolution of pathological processes
- find the correlation between the cotton returns and Mn contents in soils and to elaborate on this base a new way to value the presown grain quality
- choose the wall material of ancient monuments of a region, which were not strongly subjected to ecological impact, as standards to monitor the background of chemical elements in soils
- value the ecologically agrochemical conditions of soils for main cotton-sawing zones of Uzbekistan

- perform a large scale mapping of soils to find the Mn contents and to elaborate the technology of introduction of Mn - containing microfertilizers
- estimate the intercorrelation between overall concentrations and their mobility as well as other physical chemical parameters, in particular, the ion potential
- select individual bio-geochemical provinces and subregions of biosphere with a high Na and Cl (area round the Aral sea) and Hg, Sb, As-contents (the valley of the Zeravshan river)

The report also presents some special problems of agriculture of Uzbekistan.



A MECHANISTIC APPROACH TO POSTIRRADIATION SPOILAGE KINETICS OF FISH

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In order to simulate postirradiation spoilage of fish, the mechanistic aspects of the growth of surviving microorganisms during chill storage and their product formation in irradiated fish were analyzed. Anchovy (*Engraulis encrasicolus*) samples those unirradiated and irradiated at 1, 2 and 3 kGy doses of gamma radiation were stored at +2⁰C for 21 days. Total bacterial counts (TBC) and trimethylamine (TMA) analysis of the samples were done periodically during storage. Depending on the proposed spoilage mechanism, kinetic model equations were derived. By using experimental data of TBC and TMA in the developed model, the postirradiation spoilage parameters including growth rate constant, initial and maximum attainable TBC, lag time and TMA yield were evaluated and microbial spoilage of fish was simulated for postirradiation storage. Shelf life of irradiated fish was estimated depending on the spoilage kinetics. Dose effects on the kinetic parameters were analyzed. It is suggested that the kinetic evaluation method developed in this study may be used for quality assessment, shelf life determination and dose optimization for radiation preservation of fish.



MECHANISTIC AND KINETIC ASPECTS OF MICROBIAL INACTIVATION IN FOOD IRRADIATION PROCESSES

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A proper reaction mechanism was searched by analyzing the inactivation processes of microorganisms during food irradiation by ionizing radiation. By employing transition-state