Overall Results and Prospects of 35-year izatizon studying

Loziyk L.V., Potopalskiy A.I., Mirolyibova A.N., Bessarabov B.F.

Scientific production association "Dobrodeya", Lviv, Ukraine
Institute of molecular biology and genetics NAS of Ukraine, Kyiv, Ukraine
Moscow national academy of veterinary and biotechnologies, Moscow, Russia

Nowadays humanity revalues the negative influence of viruses on the humankind and the visual environment of plants and animals.

The beginning of the XX-th century was marked with the viral epidemic of "Spaniard" that took away many lives. Flu outbreaks on a global scale have been repeated regularly since that time. The virus with the transformed antigen structure provoked them. Serious consequences provoke viral encephalitis, hepatitis and poliomyelitis outbreaks. At the same time, viral pestilence strikes poultry, hogs, cattle, useful insects and fish. More often, the vegetative world becomes the subject of viral attacks that lead to the great economic losses for both backward and developed countries.

The alteration of the creatures living sphere has resulted in the natural resistance drop to the negative influence of environment and large extension of already known and new viral infections and cancerous growths and leucosis. AIDS occupies the special place among them. Present situation demands, along with the traditional methods of prevention and treating of viral diseases with different vaccines and serums, to form the new direction in this viral struggle with the help of medications, but the development of this promising direction delays because of the insufficient specificity and wideness of the therapeutic action of new antiviral preparations. These defects are connected, on the one hand, with the viruses that in their development depend on the metabolism intimate mechanisms in the cell-master that serve as obligate parasites and, on the other hand, with the immunosuppressive virus influence on the affected organism.

Therefore, the success in the fight with viral infections is possible only if we use preparations with high specificity of antiviral activity and their parallel immunoregulatory effect on the organism – the host. Modification products of natural materials and their analogs have such characteristics. A number of products that are the results of alkylations of natural materials and their components and analogs, obtained after many years of work directed on modification, selection and creating of new antitumoral, antiviral and antimicrobial preparations serve as a confirmation of this conception.

Izatizon was determined as the most perspective among new biologically active preparations with given characteristics that had been explored. A line of officinal forms and compositions and several prospective and functional analogs were obtained on its basis. It should be noted a wide spectrum of antiviral action of izatizon.

Herpes virus, mixovirus, specifically flu viruses of A and A-2, herpes labialis, herpes zoster, Marek's disease, infectious laryngotracheitis, bronchopneumonia of horses and calves, ectromelia virus, variolovaccine virus, Venezuelan encephalomyelitis virus of horses, enteritis virus of hogs, enteroviruses of swimming birds are all sensitive to izatizon. Izatizon effect during Marek's disease depends on the multiplicity of injections and directional dose that is it influences therapeutically the organism infected with viral tumor. Izatizon has an abscopal effect on the in vivo virus reproduction and reduces sickness rate during the experimental contamination and in the industrial conditions even without vaccination. The preparation is destructive for DNA- and RNA-containing viruses of insects, plants, fishes and men including AIDS virus as well.

On numerous experimental models wide dose preparation's spectrum and application scheme was established. Therapeutic and preventive effects directly depend on the concentration and application method. Izatizon shows 80-100% protective effect if we compare it with the other well-known medical preparations in appropriate application conditions.

Izatizon inhibits viral reproduction with simultaneous increasing of the specific and nonspecific resistance that is it displays immunoregulating activity. Here the weigh of animals and birds and their productivity (egg-laying qualities, shear of wool, etc.) are raise. Izatizon parallel with high specific activity belongs to the group of the substances with low-grade toxic characteristics.

Izatizon only in completely toxic doses shows intoxication in the experiments with animals (white mice, rats, cats, dogs). LD_{50} of izatizon for mice under internal injection is 11,4 - 31,4 mg/kg; for rats 13,9 - 45,0 mg/kg; its enteral introduction for rats was equal to 133 - 319,0 mg/kg; for mice – 25 - 47,0 mg/kg. Injection of total lethal preparation doses to rats leaded to the weakly marked destructive alterations of liver, lungs and heart.

Izatizon has the capability to reduce muscle tone of the bowel and to raise its sensitivity to acetylcholine and barium chloride. The preparation does not inhibit blood formation and does not have cumulative characteristics.

During its application in the inductive phase of immunogenesis the preparation alleviates the anaphylactic shock procession, insignificantly inhibits phagocytic leukocytes activity and cytolytic characteristics of blood serum, stimulates the interferon formation. Even durational application of therapeutic concentrations did not lead to the toxic displays. 10- and 30- multiple preparation application 1/10-1/16 LD_{50} did not provoke pathomorphological changes.

Izatizon is not toxic in the recommended doses. Method and schemes of its application do not allow the overdose, as even in case of high doses and amplified schemes of treatment the side effects were not noticed. Even if continually breathe in the preparation during 10 days no toxic effects were provoked.

Examination results of izatizon medicinal forms and its structural and functional analogs, virotiazolizin preparation particularly, show great perspectives in this direction.

Virus reproduction inhibition is shown onto 2,5 lg during preventive and medical application. We see this from the researches held on the model of viral transmissible gastroenteritis of hogs (swine kidney cells).

Izatizon was used in the combination with generally accepted treatment methods during the surgical pathology of different ethiology of cattle cubs.

These researches have shown that the preparation provides the recovery and recommended as an antiphlogistic and antiseptic mean and for productivity and natural resistance elevation as well.

Izatizon medicinal forms and its analogs are very perspective against viruses of beneficial insects (oat and silkworms, etc.), plants (X and Y potato virus, tobacco mosaics virus, etc.) and against viruses of commercial fish.

Given data, authenticate the wide spectrum of izatizon antiviral activity. Clinical tests have confirmed experimental results and permitted to recommend izatizon for the wide clinical application.

The preparation is approbated and widely used in Ukraine and Russia. During last 10 years, preceding the USSR collapse, izatizon was successfully studied in poultry farming and cattle-breeding complexes of Hungary, Bulgaria and Syria. Then this work was stopped because of the money lack.

Izatizon is rewarded with the silver medal of VDNH USSR and Ukraine, international diploma of II degree and silver medal on the 70-th exhibition-fair “Omek-85” devoted to the agricultural and food industry (Budapest, august 1985).