OLIGOSACCHARINS; ELICITING AND PROTECTIVE QUALITIE:

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The aim of the modern biotechnology is the creation of per fect technologie the agriculture in order to receive the ecologically pure production maintaining the highest yields and quality of production (the sugars, vita and dry substances balance). For achievement of this aim the main fac tor is t effective, ecologically pure growth regulators and means for plants protectio In the past two decades the group of biologically active substances (BA oligosaccharins (OS) - attracts the biolo gists' attention. So, the data of Ame Research Centre of complex carbohidrates show that in the plants obviously play the role of molecules-mediators in the process of intercel communication, stimulating the growth and development, the survival unde unenvironmental conditions. They can con trol the immune functions of pl processes of their growth and differentiation. Besides, OS stimulate and reg the im mune status of plant tissues.

There are five groups of biologically active OS derived from fungal and cell wall, chitin, mammals' milk or by the chemical synthesis: oligosaccha beta-glucan, oligomeric chitosan, lipooligosaccharides, pectin and xylogl oligosac charides. The main distinctive feature of OS is their highest biolo activity under the lowest concentrations (8-9 pM). They induce in plant number of protective reactions against phytopathogens: the formation phytoalexines, inhibition of proteinase, beta-glucanase, chitinase and also synthesis of callosa and lignin [10].

The distinctive feature of plants OS is a participation in the regulation of p growth and development processes. So, pectin OS induce in the culture tobacco pedicles formation of flowers or vegetative shoots, inhibite rhizoge and indu ced by auxine elongation of segments of etiolated pea shoots.

There were observed under investigations of soluble carbo hydrates fragme molecule weight near 5000 Da) the increa sing of plants frost tolerance [19]. studing of potato OS showed that they caused the intensification of wou reparati on of potatoes tubers, the number of protective effects and sti mu phytoalexines formation [1].

Among OS the most unstudied are xyloglucan OS (XOS). It is known that appear antiauxine effect. The data of O.Ash [1] showed that (pentasaccharide) accelerated the formation of callus and meristematic zc According to [6] XOS inhibited growth reactions which were induced by au

and fusicoccine and increased plant tolerance to pathogens. XOS induced rhizoge nesis with the absence of auxine and in presence of it they ac tivated formation of callus and morphogenesis.

Obviously, biological activity of XOS is connected with presence of alfa-L-fucose, which is a component of disaccharide Fuc-alfa-1-2-Gal. Fucosides with the connection alfa-1-2 are more active elicitors of stability than oligomers Fuc-alfa-1-3 or Fuc-alfa-1-4. The third monosaccharide connected with the fragment Fuc-alfa-1-2-Gal plays an important role. If it is Xyl the receptivity to pathogens increase, in changing Xyl to Glc, GlcNAc or GalNAc vice versa [9].

Generally biological function of chitinase and proteinase enzymes secreted by epidermis is destruction of cuticula. Chiti nase was discovered in plant organisms. As it was seen from ex periments, its function is in the increasing of plants immunity under pathogens action.

The treatment by chitosan elicitors is the effective mean for agricultural plants (grape, wheat etc) protection [2, 5]. Researches showed that the chitosan activated chitinase and pa thogendepended proteins, which activity promote the decreasing of plant contamination by microorganisms. Protective action of chitosan was marked on the number of cultural plants [2, 5].

It's known, that chitosan greately influences on proceed ing of cell cycle in the meristem cells of winter wheat seed lings [5, 11]. Into the plant cell and its nucleus, obviously, chitosan cooperates with DNA and can influence on the genes ex pression [13]. This process is followed by de novo synthesis of nucleic acids and proteins, induction of the formation of en zymes: beta-glucanase, chitinase, pectolytic enzymes, and acti vation of phytoalexines and ethylene synthesis, lignification and suberinisation of tissues [4, 7, 14, 16, 17, 18]. So the so call supersensitivity reaction develops.

The study of polymeric preparations of chitosan was held by authors of the article (the degree of deacetilation all over 82%, average molecule weight all over 0.5-1.2 mDa) on grape in fected by mildew and on in vitro growth of tomato explants (cv Novichok). Researches had shown that two times treatment by sprinkling (0.01-0.1% chitosan water solution) increased the re sistance to mildew and completely protected plants from this pa thogen in the field conditions. During 30-days cultivation of tomato apexes on the MS medium chitosan in dose 0.01% enlarged root length and in dose of 0.05% of chitosan retardant effect was marked [3].

Curiously, that many of retardants including ethylene and its producers increased plants resistance to fungal pathogens [8].

So, it follows from the above-mentioned, that study of the new molecules-mediators OS give the opportunity to discover additional mechanisms of immune reactions in the organism and to investigate eliciting and growth regulating processes, simulta neously proceeding in plant organism. Insufficient study both chemical and biological nature of OS gives the possibility to carry investigations of immanent effects arising upon the inter action «genotype-environment».