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FEATURES OF DISTRIBUTION OF RECEPTORS TO THE WHEAT GERM AGGLUTININ (WGA) IN THE INTERCELLULAR MATRIX OF THE MENISCI OF RAT KNEE JOINT AFTER INTRAFETAL INJECTION OF ANTIGENS

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The results of previous researches at the Department of Human Anatomy of Zaporizhzhia State Medical University have shown that for the modeling of the syndrome of undifferentiated connective tissue dysplasia in rats it is possible to use the intrauterine antigenic effect that leads to changes in the rates of morphogenesis of fetal organs and tissues [3]. Lectins are informative molecular probes that can detect glycoconjugates in cells and tissues. Lectins and their receptors provide intercellular, cell-matrix interactions, participate in the regulation of proliferation, differentiation and apoptosis of cells [1, 2].

Aim of the work was to establish the features of distribution of receptors to the wheat germ agglutinin (WGA) in the intercellular matrix of the menisci of rat knee joint after intrafetal injection of antigens.

Material and methods. Menisci of knee joints were studied in 160 white laboratory rats from 1 to 90 days of life. Group I - 60 intact rats. Group II – 60 experimental rats – the offspring of female rats, which on the 18th day of the dated pregnancy underwent the injection of purified staphylococcal toxoid (1:10, 0.05 ml) according to the method of Professor N.A. Voloshyn (1981). 40 rats of group III after injection of saline solution served as control. When working with animals we were guided by «European Convention for the Protection of Vertebrate Animals used for Experimental

and Other Scientific Purposes» (Strasbourg, 18.03.86) and Law of Ukraine «On the protection of animals against cruel treatment» (№ 3447-IV). Receptors to wheat germ agglutinin (WGA) in the histological sections were detected using standardized sets of PNA-HRP (RPC «Lectinotest»). The imaging was carried out in the diaminobenzidine-hydrogen peroxide system. The intensity of the deposition of benzidine label was assessed semi-quantitatively.

Results. In newborn animals, the content of wheat germ agglutinin (WGA) receptors in both zones of menisci of intact and control animals remains low (+). The visceral portion of joint capsule which covers the menisci is colored in brown (+++) in all groups of animals and does not change the color for three months of observation and does not change it in the group of antigen-primed animals

The established content of receptors to wheat germ agglutinin (WGA) persists during the first week after birth. In antigen-primed animals on the 7th day there is an increase in the content (++) of residues of N-acetyl-D-glucosamine in the outer zone. Similar increase in the intensity of the deposition of the benzidine label is observed in the outer zone of menisci of animals of the intact group only on the 11th day.

On the 14th day after birth, the number of wheat germ (WGA) agglutinin receptors increases in the inner zone of menisci of animals of all studied groups (from + to ++) and remains at this level until the end of the third month of life. In the outer zone the content of N-acetyl-D-glucosamine residues in intact and control animals remains unchanged (++) with its simultaneous increase in menisci of antigen-primed animals (+++).

On the 21st day the number of wheat germ agglutinin (WGA) receptors in the inner zone of menisci of rats of all groups is not changed as compared to the previous term. In contrast to this, in the external zone of menisci of intact and control rats, an increase in the content of N-acetyl-D-glucosamine residues (+++), which was characteristic for the antigen-premixed rats on the 14th day, is observed.

On the 30th day after birth, the number of wheat germ agglutinin (WGA) receptors in the intercellular matrix of the outer zone of the menisci of the rats of intact and control group is reduced (++) . But in the experimental group, this decrease is only on the 45th day.

Later, by the end of the third month of postnatal life, the content of the receptors to wheat germ agglutinin (WGA) remains unchanged (++) in both zones of menisci of animals of all studied groups.

Thus, during three months after birth, there is a tendency to increase of the number of wheat germ agglutinin (WGA) receptors in rat menisci, accelerated from 7th to 30th day in antigen-primed animals as compared to intact and control animals.

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Key words: lectins, germ agglutinin receptors, dysplasia

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