Research article

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SIALOGLYCANS OF SKIN DERIVATIVES OF RAT OFFSPRING ON THE 10TH POST-NATAL DAY OF DEVELOPMENT AT THE BACKGROUND OF EXPERIMENTAL MERCAZOLIL-INDUCED HYPOTHYROSIS OF MATERNAL ORGANISM

The study was conducted as a part of research works "Lectin markers and cytoplasmatic signal molecules in the process of cellular differentiation and proliferation" (state registration 0700U00106), "Searching for new lectin preparations from the raw materials of the Carpathian region and for the ways of their use in biology and medicine" (state registration 0107U001048).

Key words: hypothyroidism, skin, hair, sebaceous gland, lectin SNA, lectin WGA.

Summary. With the use of sialo-specific lectins WGA and SNA, to investigate the role of sialoglycans in differentiation of structural components of skin derivatives in the offspring of control and hypothyrotic rats on the 10th postnatal day of development. Hypothyrosis was modeled by introduced with food mercazolil (5 mg/kg of body weight). Sliced skin taken from the back of offspring of control and hypothyrotic females were fixed in 4% neutral formalin and embedded in paraffin. Preparations 5-7 μm thick were stained with hematoxylin and eosin to study their general morphology. Lectin conjugates with horse-raddish peroxidase were used to identify carbohydrate determinants. Lectin receptors were visualized in the system 3́ 3-diaminobenzidin-H_2O_2. Reduced activity of metabolic processes at the background of thyroid hypofucntion in the maternal organism was noticed to be associated with reduced morphogenesis as well as slight decrease of the expression of sialoglycans that act as signal molecules and influencing growth processes and differentiation of structural components of skin derivatives.

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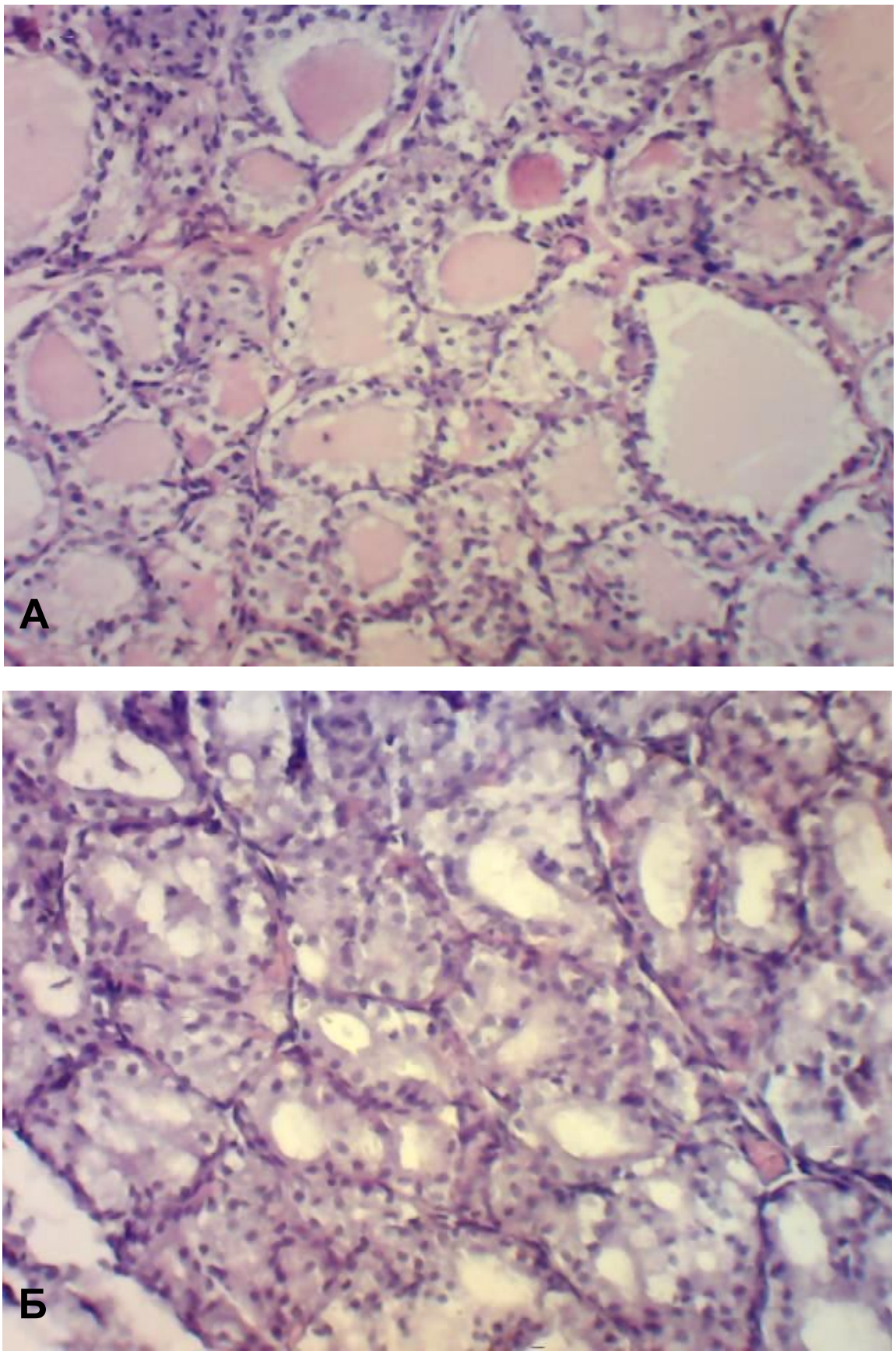

Fig. 1. Thyroid gland. Hematoxylin & Eosin stainins. А – group of control. ×150. Б – experimental group (after mercasolil administration). ×150.

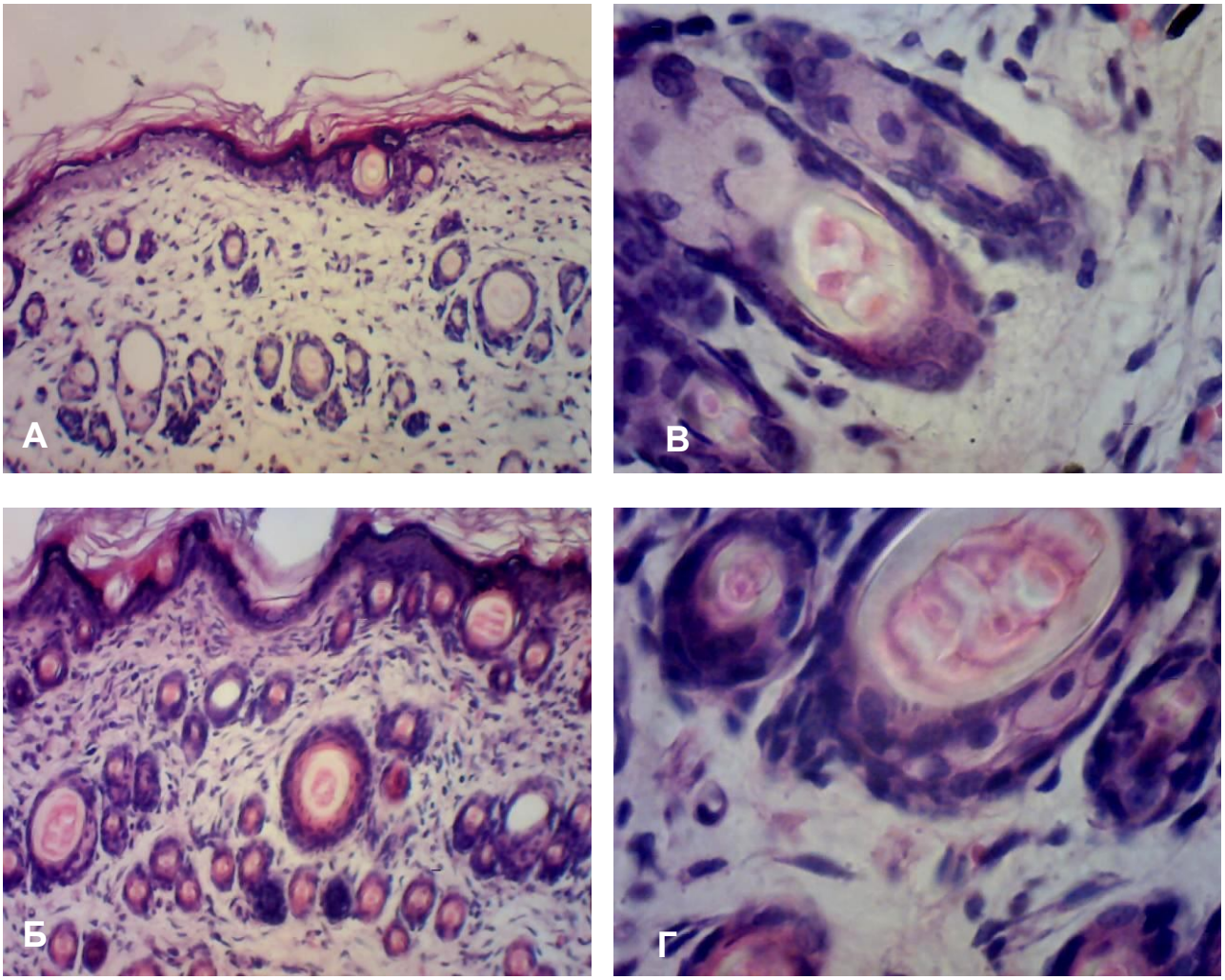

Fig. 2. Rat skin on the 10th day of postnatal development. Hematoxylin & Eosin stainins. А – hair follicles of the control group rats' offsprings. ×300. Б – hair follicles of the hypothyroid female rats' offsprings. ×300. В – hair follicle and sebaceous gland of the control group rats' offsprings. ×600. Г – hair follicle and sebaceous gland of the experimental group rats' offsprings. ×600.

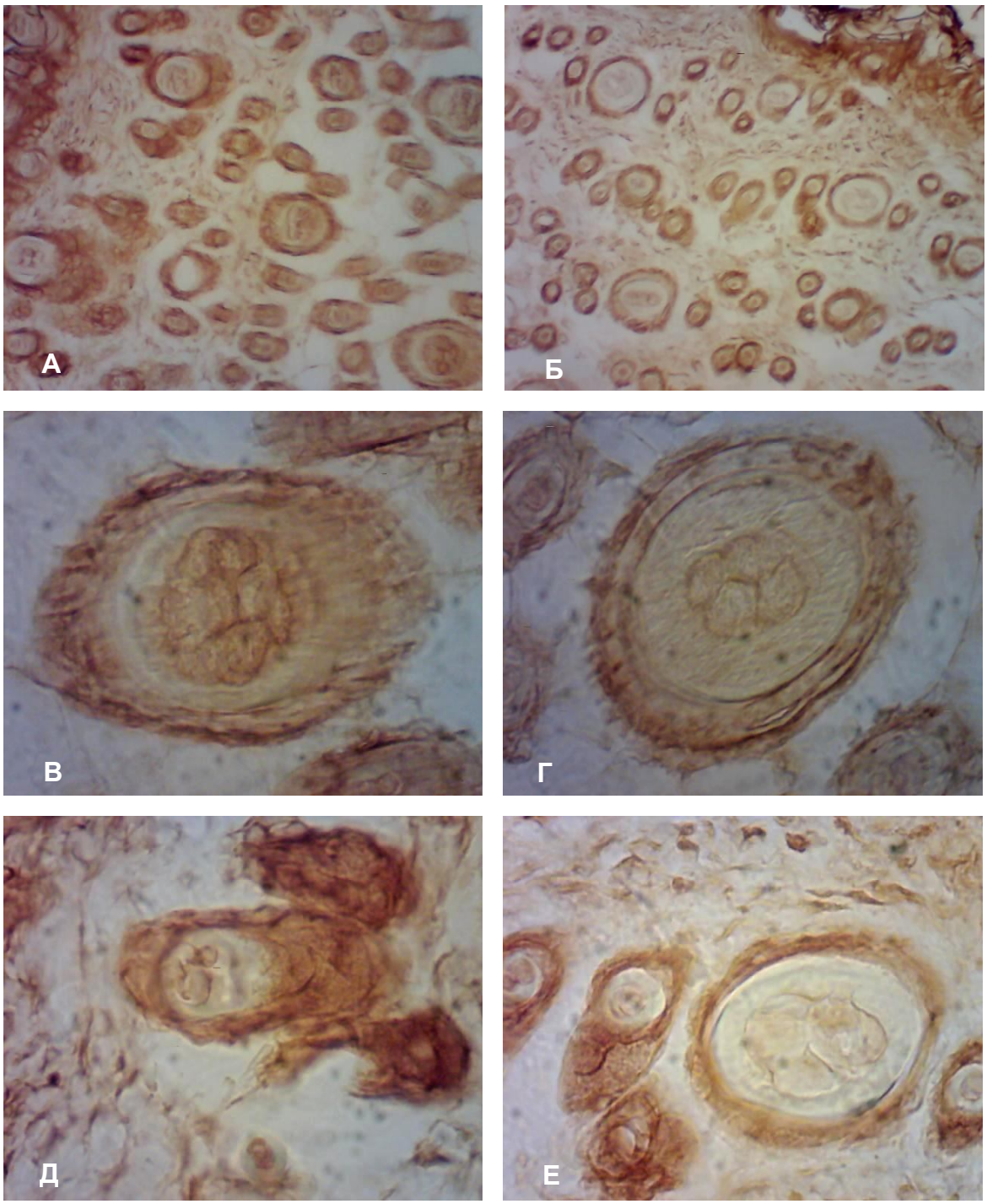

Fig. 3. Expression of the SNA lectin receptors in the skin derivatives on the 10th day of postnatal development. А – hair follicles of the control group rats' offsprings. ×300. Б – hair follicles of the hypothyroid female rats' offsprings. ×300. В – SNA lectin receptors in the external epithelial vagina and the medulla of the hair root of the control group rats' offsprings. ×600. Г – decrease of the SNA lectin receptor expression in the medulla of the hair root in the hypothyroid female rats' offsprings. ×600. Д – binding the SNA lectin receptors to the surface of the sebocytes in the sebaceous glands of the control group rats' offsprings. ×600. Е – slight decrease of the SNA lectin receptor expression on the surface of the sebocytes in the sebaceous glands in the hypothyroid female rats' offsprings. ×600.

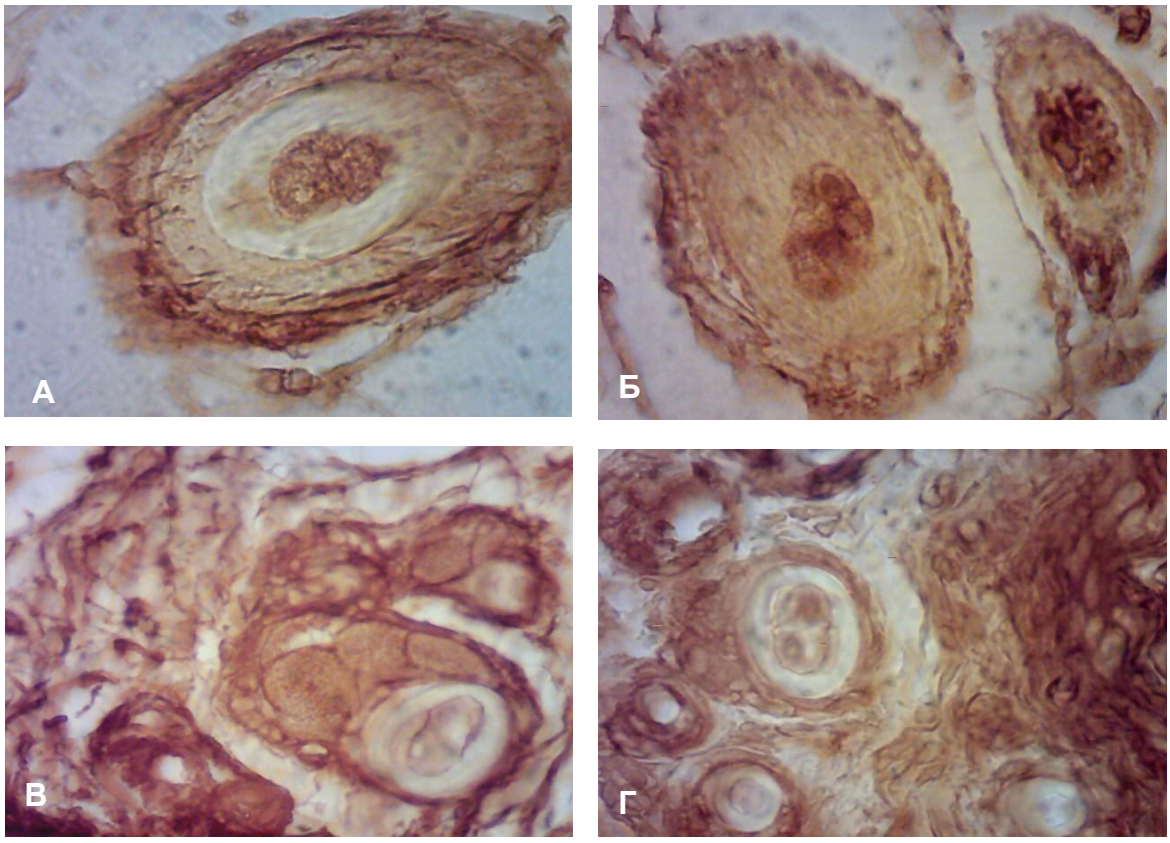

Fig. 4. Expression of the WGA lectin receptors in the skin derivatives on the 10th day of postnatal development. А – expression of the WGA lectin receptors in the medulla of the hair root of the control group rats' offsprings. ×600. Б – slight expression of the WGA lectin receptors in the cuticle of the hair root of experimental animals. ×600. В – the WGA lectin receptors on the surface of the sebocytes and in the basal membrane of the terminal secretory portions of the sebaceous glands of the control group rats' offsprings. ×600. Г – decrease of the binding intensity in the sebocytes of the sebaceous glands of the experimental group of animals. ×600.

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