Intradermal injection of bioactive compounds is one of the current methods of human skin rejuvenation. To date the choice of highly efficient and comprehensive drugs for mesotherapy is very restricted. The human umbilical cord Wharton’s jelly (HUCWJ) comprises hyaluronic acid (70%), collagen, glycosaminoglycans, hormones, enzymes, vitamins, trace elements, which are able to positively influence the regenerative processes in skin and aging organism [O. Maslov, 2016]. Cryogenic methods allow the obtaining of a set of biologically active substances of HUCWJ and enable its in-depth testing, which is a prerequisite to be used in clinic.

The research aim was to determine the effect of low temperatures on preservation of essential compounds of HUSWJ, to develop the way of its cryoextract obtaining and subsequent use as a drug for mesotherapy of the age-related changes.

The fragments of umbilical cord obtained after the informed consent from women in labour were the research object. From the fragments of umbilical cord we have removed the vessels, amniotic membrane, then disintegrated and placed into 1.8 ml cryovials for slow freezing (down to –20°C), then stored within 3 days. After warming in a water bath (40°C) the samples were homogenized, phosphate-buffered saline buffer was added and left for an hour at 4°C for extraction. Further the HUCWJ homogenate was three times centrifuged and filtered through a nylon mesh. The resulting cryoextract of HUCWJ was diluted with phosphate buffered saline to reach 1% solution of hyaluronic acid. Effect of low temperatures on the composition of the HUCWJ cryoextract was determined by the following indices content of total protein, glucose, seromucoids, level of estradiol and prolactin, and compared to the extract derived from native tissue.

It has been revealed that freezing of umbilical cord fragments down to –20°C did not affect the content of the substances. The HUCWJ cryoextract had total protein concentration of (0.12 ± 0.02) g/l, glucose content was (2.5 ± 0.1) mmol/l and (0.42 ± 0.06) units for seromucoids S-H, (2.941 ± 87) pg/ml for estradiol, (1.971 ± 51) mIU/l for prolactin, that virtually corresponded to the indices of freshly isolated tissue.

In future we are planning to investigate the effect of ultra low temperatures, long-term storage on preservation rate of HUCWJ cryoextract as well as to examine its efficiency as a drug for intradermal injection during involution changes in the experiment (in rats of late ontogeny and young ovariectomized females).