**Table 2** – The algorithm of program for microcontroller

| № | | | |
|---|---|---|---|
| 1 | Access point | | |
| 2 | The initialization of microcontroller's registers (PIC16F870) | | |
| 3 | A routine for waiting for reception of control codes | | |
| 4 | Is the code has been received? | Negative | Back to routine (2-3) |
| | | Positive | Go to routine(5) |
| 5 | Translation and execution of control codes | | |
| 6 | The analog to digital conversation of signals from all analog channels | | |
| 7 | K(ADC)>Klim? | Negative | Back to routine (8) |
| | | Positive | Go to routine (9) |
| 8 | Turn on the indicator of battery discharging | | Back to routine (5-6) |
| 9 | Turn off the indicator of battery discharging | | |
| 10 | CRC calculation | | |
| 11 | A routine for synchro-byte of frame beginning uploading to USART | | |
| 12 | A routine for uploading of counts (channels 1 and 2 of ADC) to USART | | |
| 13 | A routine for CRC uploading | | Back to (5-6) |

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## MECHANISMS OF HISTOGENESIS AND CYTOMORPHOGENESIS OF EPITHELIOID CELLS IN CHRONIC GRANULOMATOUS PROCESSES. THE FACTS AND HYPOTHESES

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It is known that during an embryogenesis the number of cell-like types will be derivated strictly particular for each species of organism, each of which has only to it intrinsic morphophysiological characteristic. One cells function only at particular stages embryonal development and then fade in outcome apoptotic death, others, on the contrary, are characteristic only for an adult organism. However, in researching granulomas forming at some granulomatousis diseases, already for a long time the cells were circumscribed which are not occur in a healthy organism. To number of such cells referred «basophilic hystiocytes» in rheumatic disease, Mikulich cells in scleroma, epithelioid cells (EC), formating epithelioid cell granulomas in a number of infectious, allergic and autoimmune diseases, and also other forms of atypical cells.

It was shown that EC forming in the nidus of the inflammation in granulomatousis diseases of different etiology. Suppose that EC do not enter number of differentiated cell-like types neither embryonic not adult organism; they occur only at particular pathological statuses and forming EC-granulomas. This granulomas determine clinicomorphologic essence of many granulomatousis diseases in man. Moreover, the EC-granulomas form in different groups animals relating to different branches of "phylogenetic tree". Thus, epithelioid cell formation in the nidus of inflammation can be related to one of most ancient mechanisms of cell-like response on imbalance of the «antigenic-structural" homeostasis in organism.

The concept of EC origin from cells of macrophage family till now is considered conventional, which some theoretical fundamentals were hypotheca in workers of Ashoff L. (1924) and Maksimov A.A. (1926). Affirms that EC transform from macrophages (Mph) located in the nidus where the pathological process flows past and under some conditions - directly from monocytes of a blood. This concept undations on a hypothesis that in a basis of the differentiation resulting in to derivation EC from Mph in reply to particular

pathogenic stimulus lie the changes of genic activity, and that in a basis of this transformation resulting in to formation EC lie epigenetic of changes, and the phenomenon can be considered as "intra-tissue transdetermination" (Shvemberger I.N., 1976). Important thus to mark that till now is not obtained enouph convince facts touching not only the mechanisms of transformation of Mph into EC, but also process of series transformation of Mph into EC. It is explained to that indicated the concept and hypothesis based, mainly, on the results of classic morphological researches, in which, as well as in many modern morphological works, registered only the fact of appearance of EC in populations of cells of macrophage type without the analysis of the transition forms from Mph to EC. It is necessary thus to underline that in none of works dedicated search of EC metastructure, is not obtained of enough convincing and indisputable evidences of existence of the legible transition forms between Mph and EC. Moreover, there are no convincing facts which would testify that differentiated Mph can undergo differentiation that is switch on in the process being a basis of possible conversion cell-like phenotype.

At usage of cell-like technologies in learning EC cytomorphogenesis we obtained the in essence new facts which have forced us to refuse the concept of origin of EC from Mph. The application of different cell-like technologies (cultivation in vitro, transplantation of cells in vivo, explantation of cells of granulomas in cultures) allows to place that among peritoneal cells, mononuclear blood cells and bone marrow exist low-differentiated cells - EC-precursors (pre-EC), distinguishing from cells of macrophage series on number of cytomorphologic identifiers registered in vitro (Arkhipov S.A., 1996). Obtained data allow us to confirm the hypothesis expressed earlier (Arkhipov S.A., 1995) that exist unipotent precursors EC (pre-pre-EC) which differentiate only into EC at defined conditions combined in the nidus of chronic inflammation. All stages of differentiation of pre-EC into mature cells of epithelioid type possessing about proliferative activity are defined. On the basis of the obtained data lay down the new conception of origin and differentiation of EC (Arkhipov S.A., 1997). The essence of this concept is that EC is concidered as a terminal link of differentiation of a separate hemopoietic line of cells histogenetic independent from granulocyte-macrophage direction of a hemogenesis from which at particular pathological processes differentiate all types of EC. Is was shown that of EC-germ forming in norm quantitatively restricted population of low-differentiated monocytoid blood cells being committed cells-precursors of EC. In cronic inflammation the pool of pre-EC in organism increases. By cytomorphologic characteristics pre-EC were referred to the class of reticular cells.

Now we obtain the new experiment data indicating the existence a genetic determinancy of a datum basal level epithelioid cell reactivity concerning different inductors of an inflammation. Set a question on correlation between function and phenotypic variation of EC. Data obtained directing that the morphogenesis epithelioid cell granulomas might determine by the several factors: initial genetically determinate level of a pool pre-pre-EC, inflow pre-EC, committed in EC trend of differentiation in the nidus of inflammation, and also intensity of processes of their proliferation and differentiation.

The data obtained by us allow in a new fashion to formulate a hypothesis about a probable origin and early stages of a histogenesis EC, namely that EC might the descendants of mesenchymal stem cells of a bone marrow parentage, out of which differentiate some stromal cells of organism. Apparently the verification of this hypothesis is inconceivable without usage of new modern cell-like technologies. The clearing up of early stages of EC histogenesis will allow to answer the question not only about biological essence of EC formating in different chronic granulomatous processes, but also more precisely to spot their function assignment in an organism at pathology.

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