Research Journal of Medical Sciences 9 (4): 237-239, 2015
ISSN: 1815-9346


# Research of the Mechanism of Recognition of Cancer Cells by T-lymphocytes of Immune System. Physics and Chemistry of this Mechanism

[1, 2]Adambek M. Tatenov and [3]Sultan T. Tuleuhanov
[1]Eurasian Technological University, Astana, Kazakhstan
[2]"Informational and Educational Technologies" LLP, Almaty, Kazakhstan
[3]Al-Farabi Kazakh National University, Almaty, Kazakhstan

**Abstract:** A study is devoted to different views on recognition of cancer cells by the immune system, in particular T-lymphocytes, there are given the different substantiations of the question and together with it, the different approaches. Researcher's are inclined to believe that in recognitions of cancer cells, the basis are weak electromagnetic waves, radiated unlike the radiation of healthy cells and T-akin lymphocytes of immune system which are reacted and recognized on the radiation of electromagnetic waves.

**Key words:** T-lymphocytes, T-killer, recognition of cancer cells, white corpuscles, electromagnetic waves

## INTRODUCTION

Researches of the American and British scientists were served of the different views on recognition of cancer cells. They made a record on video of attack of T-lymphocytes of immune system to cancer cells. On video, T-killers (lymphocytes) of immune system track down and destroy cancer cells. Researches on this subject were published in journal "Immunity". T-killers or cytotoxic T-lymphocytes are white corpuscle, specializing on lesion of viruses and tumor cells. But in one teaspoon of blood there are about 5 million. On video T-lymphocytes are presented as amorphous globules of orange and green color. They quickly move, constantly investigating of environment. As soon as T-killer finds a cancer cell (they are shown as blue), membrane "digits" of T-lymphocyte check it. Afte r such "identification" by T-killer contacts with surface of a cancer cell and enters poisonous proteins (they are shown as red) into microtubules on its surface. Leukocyte transfixes this surface, allowing poisonous protein to destroy a cancer cell (Mitio, 2013).

The chief scientist Gillian Grifits (Gillian Griffiths) discussed about it: "in our organism, where cells are in the close neighborhood with each other, by T-killers have to be chosen accurately the purpose, otherwise they will cause of harm to the neighboring healthy cells. As soon as cytotoxins get to a tumor cell, it is doomed. And in that case it have to be persisted only to watch its debilitation and death. And the T-killer continues its movement, greedy trying to find a new prey".

The image for slow-motion shot in high resolution was received by means of two methods of microscopy-confocal and sunleaf. Hereby, the researchers could specify sequences an event at attack to a cancer cell. But in this study it isn't known enough the mechanism of recognition of cancer cells by T-killers.

## DISCUSSION OF DIFFERENT VIEWS OF RECOGNITION OF CANCER CELLS

The materials which were presented in introduction, give a set of not clear questions concerning of actions of white corpuscles.

Cytotoxic T-lymphocytes or white corpuscles, specializing on destroying of viruses, practically aren't mistaken in recognitions of cancer cells, unceasingly investigating of environment. Quoting of the expression of the American scientist ideas, it is arisen a question, how are the white corpuscles specialized on destroying of viruses? How are they constantly investigated environment? The mechanism of obtaining information on environment and the cancer cells, on what are they based? After obtaining information T-lymphocytes analyze information and make decisions to attack cancer cells. If T-killers have no the thinking system, i.e., a brain, for its function of the analysis and decision-making is carried out, probably, the Central Nervous System (CNS) as you know it is a human brain. Then, how is an instant exchange of information between CNS and T-lymphocytes made? How T-lymphocytes actions are made through

**Corresponding Author:** Adambek M. Tatenov, Eurasian Technological University, Astana, Kazakhstan

CNS? These questions demand the cardinal answer not from the point of view of the biologist or the medic and from the point of view of nuclear and quantum physics.

Let's consider one more research where there is an attempt to explain hypothetically, the mechanism of recognition of cancer cells of MP1.

Scientists from the Brazilian University of Sao Paulo and the British University of Leeds found out that the Brazilian wasp "Polibia paulista" develops poison which contains substance the killing cancer cells. The MP1 toxin containing in poison, selectively destroys cancer cells and doesn't affect on healthy cells. The results of research are published in "Biophysical Journal".

Earlier, it was known that MP1 has bactericidal effect and it has the influence as on Gram-positive and gram-negative bacteria. Also, researches were showed that toxin is capable to inhibit the growing cancer cells, arising at leukemia and at malignant diseases of a bladder and prostate.

Researchers were paid attention on that in healthy cells of mammals in internal and external layers of a cellular membrane there are different in structure fats. In particular, the Phosphatidyl Serine lipids (PS) and phosphate and diethanolamine (PE) are in an inside layer of a membrane.

In cancer cells, unlike healthy, the distribution of fats is broken and molecules from an inside layer of a membrane moves into an external layer.

Researchers of work made a hypothesis that selectivity in action of MP1 can be identified with changes in composition or distribution of fats in a membrane of cancer cells. The scientists created some artificial membranes where some of which contained PS or RE fats in order to check it and they worked with MP1 toxin membranes. Generally destruction of a cellular membrane can be broken into two steps. At first molecules of toxin contact with it and then the connected molecules destroy a membrane of a cancer cell, increasing pores in a membrane and consequently also its permeability ( Kabingu *et al*., 2007).

It became clear that if at an external membrane there is a PS fat, then molecules of toxin will be contacted with a membrane much more strongly. If in the membrane included RE fat, there is MP1 toxin can be able to destroy much quicker a membrane, increasing its pores and allowing cancer cell contents, practically, to flux from it.

Here, it isn't analyzed the considered questions, what is more principally: the strong bond with a surface of a membrane of molecules of MP1 toxin or recognition of toxin: is there really a cancer cell? The second question is that there is acted only criterion a strong gluing of toxin for destroying of cells and process of recognition of cancer cells has to be before gluing (Rand *et al*., 1977).

Scientists are planed to indelicate the amino-acid sequence of MP1 toxin and to improve its selective properties. The researchers told: "if we understand the mechanism of action of MP1, we will be able to understand, how it is possible to apply toxin in medicine". As toxin affects cancer cells and doesn't affect healthy cells in laboratory, perhaps it can be used for treatment, but for confirmation of safety of MP1 it is necessary additional researches (Rowan *et al*., 2003).

Ability of molecules of MP1 toxins to select healthy and cancer cells, perhaps, it is necessary to investigate considering from other point of view, i.e., from sight of nuclear and quantum physics.

## CONCLUSION

In the given work, the mechanism of MP1 action isn't clear. Molecules of MP1 toxin are very selective in detection of cancer and healthy cells. The researcher's hypotheses of distribution of PS and RE fats on an external surface of a membrane of healthy and cancer cells especially aren't confirmed. Therefore, there are no possibilities to build the mechanism of recognition of cancer and healthy cells the MP1 toxin molecules which are only the fact on extent of molecule bounding of MP1 toxin with fats which can't be defined as the recognition mechanism. In this case, there is no video of process on the previous works and there we have only an experiment of stationary laboratory methods.

By point of view of the researcher's of this study, the approach to the solution of the given question under to the mechanism of recognition of cancer cells is lain in studying of the weak nanometric electromagnetic radiations and theirs reception by molecules of MP1 toxin and T-lymphocytes. If the atom of each chemical element of molecules of planetary model of Rutherford-Bohr is arranged as rotation on orbits of electrons round a kernel that in molecules total spin and the total electromagnetic field have a specified weak nanometric amplitude and frequency. Thus, the molecules of MP1 toxin and T-lymphocytes have electromagnetic fields which estimate of the environment and interact with it by means of energy-exchange of electromagnetic fields. For confirmation, it is necessary, research of very weak electromagnetic fields on reception and information transfer. Electromagnetic radiation of one or another frequency participates in regulation of synthesis of DNA, RNA and proteins; changes a configuration and functions

of proteinaceous molecules; operates gene regulation; division and differentiation of cells; a morphogenesis; hormonal secretion; growth and functioning of nerves. Comparison of efficiency of energy-information exchange and exchange of information by means of chemical signals is had in work biophysics of the Oxford University named after K. Makkler. He is presented the works with energy signal electromagnetic oscillations which are transferred information coming from environment which are hundred times effective, than such material signals as hormones, neurotransmitters, growth factors, etc. It is known that for survival of the organisms it is necessary to receive and interpret environment signals. Thus, the probability of a survival is caused by information transfer speed. Speed of distribution of an electromagnetic signal is equal 300,000 km $sec^{-1}$. The 50 trillionth community of cells of an organism prefers an electromagnetic way of information transfer. As we consider that is the fact. It is necessary to develop the detector and the transmitter of electromagnetic waves by means of the advanced radio-electronic equipment in order to interact with electromagnetic fields of molecules and also with an electromagnetic field of surrounding micro and macro-environment. Researches in this direction are conducted in "Informational and educational technologies" LLP laboratory of Almaty.

## REFERENCES

Kabingu, E., L. Vaughan, B. Owczarczak, K.D. Ramsey and S.O. Gollnick, 2007. $CD8^+$: T cell-mediated control of distant tumours following local photodynamic therapy is independent of $CD4^+$: T cells and dependent on natural killer cells. Br. J. Cancer, 96: 1839-1848.

Mitio, K., 2013. Physics of the Future. Doubleday, Moscow, Russia, Pages: 416.

Rand, R.J., D.M. Jenkins and R. Bulmer, 1977. T-and B-lymphocyte subpopulations in pre-invasive and invasive carcinoma of the cervix. Clinical Exp. Immunol., 30: 421-428.

Rowan, N.J., J.E. Smith and R. Sullivan, 2003. Immunomodulatory activities of mushroom glucans and polysaccharide-protein complexes in animals and humans (a review). Int. J. Med. Mushrooms, Vol. 5. 10.1615/InterJMedicMush.v5.i2.10.