

Use of Amber Acid and other components of energy balance for treatment of oncological cases

German physiologist Otto Warburg set up the hypothesis, which claims that the cause of cancer can be found in the absence of oxygen. It happens due to various reasons, and is considered to be the first step towards cellular disorders. Those disorders may become malignant. In the case of permanent insufficiency of oxygen one part of the cells perishes, another part adapts to the newly formed conditions. The latter part of the cells causes a great activity of glycolysis and like so it fills energy deficit. According to Warburg's mind, respiration disorder is the basis of re-formation of healthy cells to cancerous. Such a disorder may emerge in consequence of various reasons. The most important of them is the disorder of oxygen-supply.

Nevertheless, not every respiration disorder causes cancer. These are the conditions that cause malignant disorders:

- Respiration disorder must be reversible, i.e. it must remain after the extraction of agent, which caused the disorder.
- Respiration disorder is not supposed to be such as to cause cells losses, according to Warburg, a sudden loss of oxygen or high concentration of toxic are more dangerous than low and permanent influence of these factors.
- Respiration disorder must remain during the cell division, i.e. it becomes genetically descendible.
- Respiration disorder cannot have influence on glycolysis.
- Respiration disorder should not rebound on cellular respiration.

In that case, respiration disorder may become carcinogenic.

The conversion of normal cells into cancerous comes along in two stages. In the first stage, after the occurrence of respiration disorder, long period of the struggle for existence of cell begins. It is true to think that the only latent period of cancer formation is none other than period, during which the selection of cells happens and the glycolysis of the tissue intensifies, after the respiration disorder. Respiration disorder may be associated with the decrease number of mitochondrions in the cell.

Warburg thought that respiration of cancerous cells is not just simply weak, but weak in comparison with really intensive aerobic glycolysis. Thus, the respiration of cancerous cells becomes inferior with regard to quality (stopping of respiration, oxidation and phosphorylation). Warburg's theory was criticized more than once. Till now the question, whether disorder of mitochondrions may be a reason of the conversion of normal cell into cancerous, is open. The main goal of this work is the testing of the state cells mitochondrions and search for the influence on cancerous cells. This, in turn, lets heal the owner of those cells, carrier of cancer.

There were exams on three types of respiration of human's cancerous cells and ultra-structures: specifically, ovarian cancer (OV), stomach cancer (CaVe) and mesenchymoma of connective tissue (Sa₁₉). It is proven that great activity of glucose and weak respiration of the OV cells comes to the top. A number of mitochondrions, compared together with normal cells, decreases there. According to their external look, they were similar to mitochondrions, which are affected by the unhealthy agent for the respiration – cyanide: mitochondrions were 2 – 3 times longer. CaVe and Sa₁₉ were breathing, though glucose was increased in them also. Populations of mitochondrions were heterogeneous in Sa₁₉ cells: a lot of swollen mitochondrions. Majority of organoids were in, known as, mediate (with the optimum amount of energy) state. Small, newly formed mitochondrions are also observed. The facts suggest that activity of mitochondrions population in Sa₁₉ cell is high. The look of CaVe cells and their mitochondrions is similar to Sa₁₉, but the former are not so active and pro-mitochondrions can be seen only after irradiation of the tissue.

Table 1

Rapidity of respiration, rates of conjugation of mitochondrions and amount of ATP in cells of Sa₁₉ mitochondrions.

Substratum of oxidation	V3	V4	ADP/O	Control of respiration (by Chance)
Alpha-ketoglutarate	2,50±0,03	1,75±0,04	2,1±0,1	2,0±0,3
Amber Acid	2,00±0,05	0,76±0,06	1,8±0,2	2,6±0,1

Table

2

Amount of ATP in cells of Sa₁₉ mitochondrions

Amount of endogenous ATP (mg/mg protein)	Amount of ATP after addition of synthesized ADP (mg/mg protein)
10,1±2,1	362,6±32,4

As shown in the Table 1 and Table 2, mitochondrions, which are abstracted from Sa₁₉ cells, has a high rapidity of respiration, but rates of conjugation are reduced in them. Amount of endogenous ATP is lesser than in mitochondrions of normal tissue. Synthesis of ATP is fairly active.

Another set of experiments shows the rates of conjugation of cells respiration and mitochondrions. They are abstracted from rat hepathoma 22, from liver of rats, which has tumour, from laboratorially affected liver of rats (the expansion of tumor stopped for them after vaccination) also from not affected liver of rats.

Table 3

Respiration of mitochondrions, which are abstracted form various liver of rats. Substratum of

oxidation – glutamine acid (5 mg/ml).

Source of mitochondrions	V ₃	V ₄	ADP/O	Control of respiration (by Chance)
1. Hepathoma (n=6)	0,85±0,05	0,42±0,06	2,1±0,2	2,0±0,1
2. Liver of rats, which has tumour (n=6)	0,30±0,03	0,12±0,02	2,2±0,3	2,5±0,2
3. Laboratorially affected liver of rats (n=3)	0,74±0,02	0,20±0,04	2,8±0,04	3,7±0,4
4. Norm (n=10)	0,49±0,01	0,15±0,02	2,6±0,1	3,3±0,2
P ₁₋₂ <0,05 p ₃₋₂ <0,05 p ₃₋₁ <0,05 p ₃₋₄ <0,05				

From the Table 3 it may be noticed that rapidity of respiration of mitochondrions, which are abstracted from hepathoma, is rather higher in the liver of rats, which has tumour. Though, the rates of conjugations are almost the same. We are of the opinion that it reports about the activity of energy reactions in hepathoma (conjugation of variable mitochondrions) and their reduction in mitochondrions of liver of rats, which has tumour. High rapidity of respiration and great rates of conjugation is characteristic of mitochondrions of liver of rats affected under conditions of laboratory.

The count, basically, confirms Warburg's hypothesis, analyzing respiration disorder of cancerous cells in a wider meaning: like respiration changes and energy reactions. Therein lies, that it is possible to try to cure cancerous cells, by regeneration normal circulatory system. Herewith it helps organism, which carries cancer, to fight against this trouble.

A group of doctors of Moscow 40th hospital followed our recommendations for usage of Amber Acid (AA) together with citric acid, alpha-ketoglutarate acid, vitamins and some other medical plants. This treatment was for volunteers. During the course of treatment patients were on almost vegetarian, anti-diabetic diet. They were taking vitamins together with special medical agents of treatment. Observation period was 5 years. Patients of 2-3 stage of disease were supervised. Treatment proceeded till and after the radical operation.

Table 4

Influence of Amber Acid (together with citric acid and 2-oxo-glutaric acid on mortality of oncological patient in a course of five years (%).

Type of tumour	Conditions of experiment	Number of patients	Mortality in a course of 5 years, %
Cervical cancer	Control	5	80%
	Treatment	10	10%

Uterine myoma	Control	10	50%
	Treatment	15	0%
Ovarian cancer	Control	6	90%
	Treatment	8	30%
Cancer of intestine and rectum	Control	10	80%
	Treatment	10	10%
Mammary cancer	Control	10	60%
	Treatment	20	10%

The facts suggest that AA may be successfully used for healing oncological patients other type of results of circulatory system disorder.

Author: E.V. Kozyreva

Inst. of Biophysics, Moscow, Russian Federation