

Psychobiological basics for self-killer organisms

Abstract

Psychobiological basics for the formation of self-killer organisms are considered in this paper, which, according to the presented opinion, is due to serotonin deficiency as a result of malnutrition. It has been shown that serotonin deficiency is revealed in the organisms of those children who show aggressiveness towards animals and in those monkeys who have lost their leadership in own herd. For the prevention of the aggressiveness it is desirable as to eat food products rich in tryptophan as food additives—a serotonin precursor amino acid—red caviar (100g/790mg), black caviar (100g/710mg), Dutch cheese (100g/790mg), melted cheese (100g/500mg), etc.

Keywords: aggression, self-killer organisms, serotonin, food additives rich in tryptophan

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Introduction

Lately a number of cases of suicides increased significantly in the world and the age of suicides rejuvenated by 5-6 years. Many psychologists believe that for some people a suicide, as a self-killer phenomenon appears to be a way to escape life. As argued by psychologists and sociologists, it has different reasons. Based on one theory, all suicides have three interconnected unconscious reasons: revenge, hate (desire to kill), depression, despair (desire to die) and a sense of sinfulness (desire to be dead). Now it is well proven that a suicide appears to be an unconscious imitation, which, as a rule, is characteristic of those people who are not self-confident and try to copy other people's behaviour.¹⁻⁴

On the International Day of Mental Health, the World Health Organization has published a Suicide Scale, according to which Lithuania ranks first in the world according to suicide frequency. South Korea, Japan, Russia, Ukraine and Belarus are among the top ten. According to world rating Georgia occupies the 88 place among 107 countries.^{3,4} In the Western countries the cases of suicide are met among the widowers and unmarried people, and among them elderly men mostly dominate. Based on the statistical data of the World Health Organization, every year about one million people commit suicide, i.e. in every 40 minutes one human dies in the world. It should be noted that in Europe and the USA 30-70% of suicide are due to depression, in Asian countries the reasons inducing suicide are: psychological, social, biological, cultural and environmental factors. Most people think that suicide is a choice, but there is no doubt that the dead people have been characterized by mental disorders because of depressive condition. So, it is necessary to reveal their psychoemotional disorders, morbid mood and timely conduct their psychotherapeutic treatment.

It is noteworthy that for suicide men prefer to hang themselves, shoot or jump from height, while women prefer soporific means, poisons, gas, etc. As the psychologists claim, people commit suicide when they suffer from a lack of social relationships, especially when the problem arises suddenly, for example, loss of job, money lost in games or family demolition.^{3,4}

By the way, based on the existing data there is a definite connection between suicide rate and occupational employment of suicides. It has been turned out that the highest rate of suicides is observed among the physicians, and 300-400 physicians commit suicide on average. The rate of suicide among women and men physicians is approximately

equal. According to occupations the people of the legal professions occupy the second place.^{1,2}

Some data indicate that there is a correlation between smokers and suicides. For example, among smokers who smoke 24 cigarettes a day, the risk of suicide rises twice, while those who smoke more than 25 cigarettes a day, this risk increases to about for 4 times.⁵

Unfortunately, the cases of suicide attempt (uncompleted suicide) are not properly studied and their psychoemotional condition and suicide motivation remain to be uncertain. It's pity that official medical institutions practically do not record such cases, despite there are signs of suicide attempt: sadness, sorrow, melancholic, physical and mental condition and a number of diseases, disorders in the quantitative distribution of biologically active hormones and neurotransmitters, etc.⁴ For about 40 years the psychiatry of suicide has been formed as a separate trend. This fact in itself shows that the cases of suicide have become more frequent and it is a serious problem for physicians and psychologists.^{2,4}

Unfortunately there is no compliance between our desires and our capabilities when a person fails to realize his/her skills, he/she experiences disappointment, despair, feeling of inability, dissatisfaction, internal stiffness, which appear to be a constant source for development of depression. The depression gradually deepens and as a result a person commits suicide.⁶ Probably, a Christian suicide should be well aware of the church's negative attitude to suicides, as the God gives the person life, and God will judge when to take him away from this world. When a person interferes with God's will, he becomes God's opponent. The suicides are not mentioned in church prayers, they cannot be mentioned during the liturgy and nobody will commit a requiem for him. In religious sense, those who interfere with God are directly sent to the hell, so trust in the Christian faith and it will protect you.^{1,2} It is interesting whether suicide is an analogue of a kamikaze and other suicide terrorists behavior. Any action aimed at infringing on their own lives may be considered as a suicide, despite Japanese kamikaze calls or does not call his behavior a suicide. Kamikaze's action appears to be a ritual suicide, as they believe that committing a suicide they release their souls.^{1,2}

In Europe the first reference about the imitative nature of the suicide appeared in the XVII century after the publication of J. Goethe's novel about the suicide - "The Sorrows of Young Werther", known as "Werther syndrome" and which appeared to be a suicide encouraging factor among the youth. The doctors and psychologists

paid a serious attention to this fact.^{2,4} In the USA the impact of TV information on people psychoemotional condition and the suicide was specially studied. Murder as well as self-murder are preconditioned by the deterioration of psychical activity and aggressive social environment. Cases of murders and suicides were clearly reflected in conditions of psychoemotional and aggressive social environment, being reflected in percents:

- a. Intoxication (40-60%).
- b. Disability for work (5-10%).
- c. Depression (2-15%).
- d. Bad social conditions (5-12%).
- e. Schizophrenia, aggression (6-15%).
- f. Alcoholism, drug addiction (10-15%).
- g. Family inherited and personal functional disorders (25-50%).

It is known that attitude to suicide seems to be of imitative character. It is worth to note the rate of suicides in parallel to TV broadcasting about suicide significantly increases. For example, in America this subject was thoroughly studied for 7 years by Philips and Carstensen (1986-1993). They have established that during two

months after the TV broadcast coverage about the suicide, the suicide rate has increased 58 times.^{2,4,6} In the 80s of 2013, after the TV show "A student's death"-students who fell under the wheels of a train, the cases of suicide among 15-19 aged young people increased by 200%. In the 80s of the last century, in Australia after the show of suicide cases in the subway the number of suicides in the subway significantly increased. Because of it the subway administration prohibited TV shows about "killing on the rails" and a month later the number of suicides reduced three times.

There are some data that the suicide correlates with the mood. If it was announced about the suicide in elderly people, the cases of suicide increased in them. If the suicide has been committed by a representative of another social circle, then the number of suicides increased among representatives of the same social circle. Because of this, CNN prohibited to show dead people, blood and knives in TV shows.^{2,6} Based on the above-said a quantitative distribution of biologically active biogenic transmitters in the various areas of the brain in naturally aggressive rats and in those becoming aggressive after pilocarpine injection was specially studied in order to reveal a neurochemical correlate of aggression (Table 1). To identify aggressive rats this problem was solved by Miczek's model of "Killer-rats" and in parallel stress was modeled for one month using the same method of Miczek.^{7,8}

Table 1 Quantitative distribution of biogenic amines in brain various areas of naturally aggressive rats and those becoming aggressive after pilocarpine injection (μM/g)

Brain areas	Control	Natural Aggression	Aggression induced by pilocarpine injection
Midbrain			
Dopamine,	0.32±0.04	0.80±0.13	0.52±0.03
Norepinephrine	0.48±0.02	0.68±0.21	1.20±0.18
Serotonin	0.50±0.05	0.35±0.06	0.25±0.02
Hypothalamus			
Dopamine,	0.58±0.05	0.95±0.07	0.73±0.04
Norepinephrine	1.45±0.08	2.24±0.13	2.83±0.02
Serotonin	1.12±0.09	0.24±0.04	0.45±0.06
Hippocampus			
Dopamine	0.61±0.09	0.85±0.02	0.74±0.04
Norepinephrine	0.75±0.06	1.12±0.17	1.18±0.04
Serotonin	0.48±0.04	0.24±0.04	0.28±0.06

As shown in the Table, it has been experimentally established that in brain specific areas of naturally aggressive rats and in those becoming aggressive after pilocarpine injection, the amount of serotonin decreased by 50-70% unlike dopamine and norepinephrine the amount of which significantly increased. It should be taken into account that in children aggressive towards animals, as a rule, the amount of serotonin is significantly reduced. The amount of serotonin is considerably reduced also in monkeys who have lost the function of leader in own herd. Based on the above, serotonin was considered to be one of the neurochemical correlates of aggression and suicide.^{4,6} It should be noted that it is experimentally detected that the cases of

suicide mainly occur in the summer, in warm months of the year: in May, June and July.^{2,4,6}

According to the data of 2006-2009 the cases of suicides in Georgia were mainly revealed in the summer and warm months of the year: in May-36, in June-38 and in July-32 (Table 2)^{2,4} Probably it is noteworthy the fact that in winter under the influence of sun rays because of inadequate increase of serotonin synthesis and the stress and psychoemotional tension significantly reduce, and as a result the cases of suicide and attempts for suicide also decrease. So, you should take your children to walk in sunny winter air and improve your own and children health and psychoemotional mood.^{2,4} Bear

in mind the above mentioned, in the next series of experiments we studied how the quantitative distribution of serotonin in the rats brain specific areas might be changed during their exposition in the socially aggressive environment during one month (darkness / light-23/1, cold

- 10-180C, isolation). Unfortunately, this fact was perfectly revealed in the children raised in such families, where cold, darkness and social isolation were observed.⁹⁻¹²

Table 2 The level of lectins binding of rat erythrocyte membranes in the norm and under stress. Binding of lectins by erythrocytes membrane in stressed rats is expressed in conditional unit

Source lectin	Lectin	Carbohydrate specificity	SA* Control	SA* Stress
<i>Viscum album</i> L.	VAL	Gal, NANA	533	33
<i>Arachis hypogaea</i> L.	PNA	β -D-Gal, Gal- β (1.4-Glc)	1024	8
<i>Pisum sativum</i> L.	PSA	Man, Glc	64	64
<i>Triticum aestivum</i> L.	WGA	GlcNac, NANA	128	64
<i>Sambucus nigra</i> L.	SN	NANA	256	128

It is clearly seen from Figure 2 that during 30 days after the exposition in conditions of darkness, low temperature and isolation, the amount of serotonin significantly reduces, which is especially sharply manifested in the lateral hippocampus.³ It seems that a quantitative lack of serotonin is one of the prerequisites for the formation of aggressive and self-killer organisms.¹³⁻¹⁵ Proceeding from the above-said, the goal of our research was to find out whether the quantitative changes in serotonin amount are reflected in aggressive rats at the level of erythrocyte membrane.^{16,17} Based on the above, membrane protein 1 was isolated from the erythrocyte membrane of aggressive rats, as well as from the control ones using 0.1% detergent Triton X-100 and the electrophoretic study of its fractional content was carried out (Figure 3).

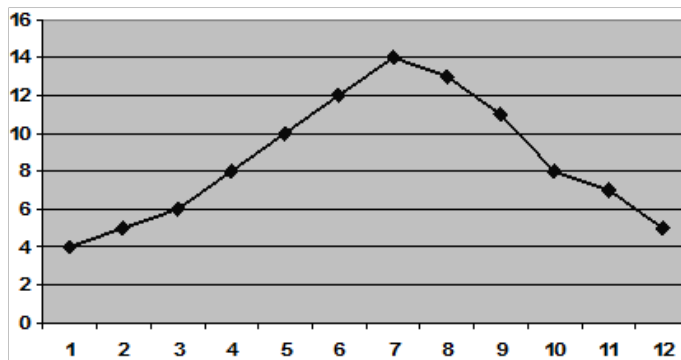


Figure 1 The impact of temperature on aggressive behavior of living organisms. On the absence – months of the year, ordinate – the cases on aggressive actions in %.

As seen from Figure 3, a quantitative change in the protein fractions of erythrocytes membrane has not been revealed, which indicates that the amount of lectin binding receptors remains unchangeable.^{4,6,9,10} To reveal aggressive organisms a special method was developed by the use of biologically active plant lectins, which made it possible to find out a quantitative distribution of glycoprotein terminal sugars at the level of rats erythrocyte membranes (Table 2). For this purpose the following lectins were used:

- VAL–*Viscum album* (haptent–Gal, NANA).
- PNA–*Arachis hypogaea* (haptent– β -D-Gal, Gal– β -(1.4-Glc).

- PSE–*Pisum sativum* (haptent–Man, Glc).
- WGA–*Triticum aestivum*(haptent–GlcNac, NANA).
- SN–*Sambucus nigra* (haptent–NANA).
- SA*–Specific activity.
- NANA–N-acetylneuraminic acid.

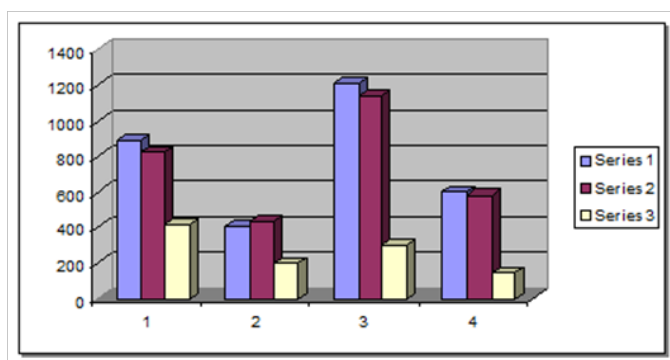


Figure 2 Quantitative distribution of serotonin ($\mu\text{M/g} \times 1000$) in rats brain various areas (midbrain - 1, hippocampus - 2, lateral hippocampus - 3, visual nuclei - 4) placed in aggressive social environment exposition during one month in the darkness /light -23/1, cold - 10-180C and social isolation. Series 1- control, Series 2 - non-aggressive rats, Series III - naturally aggressive rats.

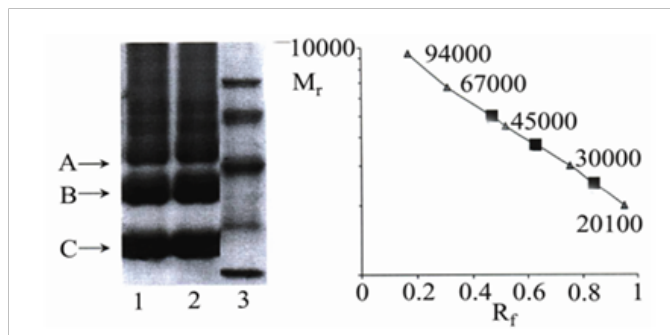


Figure 3 Electrophoregram of membrane protein 1 of stressed (1) and control (2) rats; Standard proteins with known molecular weights (3); Rf – density index.

As seen from the Table 2, *Arachis hypogaea* (PNA) lectin binding to blood erythrocytes membrane of stressed rats as compared with other lectins is about 128 times reduced.^{2,6} At the same time it has been established that psychoemotional changes are reflected at biochemical level of erythrocyte membrane in glycoprotein terminal sugars, which is due to the reduction of the amount of *Arachis hypogaea* (PNA) lectin binding to terminal sugars (β -D-Gal, Gal- β -(1,4-Glc).^{4,12,14,16} In the perspective it can be used for the identification of aggressive organisms and then for their therapy. However, such experiments have not been conducted on human blood, but in future we'll have the opportunity to timely reveal the pathologically aggressive organisms by the use of lectins and to conduct their psychotherapeutic and pharmacological treatment.

For prevention of the suicide it is desirable to recommend to depressive and aggressive people food rich by amino acid tryptophan as serotonin precursor, such as red and black caviar, Dutch and melted cheese, which are containing respectively in 100g 960, 910, 790 and 550 milligrams of serotonin precursor of tryptophan. This significantly increases the amount of serotonin in the organism of people and greatly reduces their aggressive behaviour.^{2,4,6} There are some noteworthy data in the literature that during 4-6 days while feeding the animals with food poor in tryptophan (serotonin precursor amino acid), the non-killer organisms transformed into killers as a result of the reduction of serotonin amount in the organism. During feeding with the food rich in tryptophan—serotonin precursor amino acid (25-100mg) killer rats became non-killers and tolerant to frogs and mice. There were no cases of killing when meeting with them.

It is necessary to underline that an intensive physical load also stimulates the synthesis of serotonin. We tested this with the example of fatigue in rats. The results turned out to be very interesting. After the rats have become strongly tired after water swimming, they do not reveal aggression towards frogs and mice and disposition to killing.^{2,4,6,17,18} Therefore the heads of schools are recommended to enhance physical loadings in the intervals between the lessons in order to quantitatively reduce and neutralize the biologically active substances. It is believed that this will undoubtedly establish healthy lifestyle among young people.

Conclusion

One of the prerequisites for causing the formation of aggressive and suicide organisms is thought to be a quantitative decrease of biologically active biogenic amine—serotonin during depressive and stressful conditions. In conditions of depression and strong psychoemotional state for the prevention it is desirable to eat food products rich in tryptophan as food additives—a serotonin precursor amino acid.

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Conflict of interest

The author declares no conflict of interest.

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