

CLINICAL STUDY ON CELL GUARD'S EFFECTS ON PERSONS AFFECTED BY RADIATION AS A RESULT OF THE CHERNOBYL NUCLEAR ACCIDENT CONTINUED...

made up 1.021 ± 0324 points was observed in the test group; -0.14± 0.426 (p> 0.05). Certain disorder of immediate and operational memory was revealed in 23 pax (48.9%) and 7 pax (29.2%, test and control group respectively. In the test group, a further deterioration of memory indices was observed in 8.7% of persons; no dynamism in 21.7%; improvement in 69.6%; a complete normalization of the index in 34.8% of persons; 28.6, 28.6, 42.8, 28.6% (p>0.05) of the control group respectively.

Xi Vexler index proved a more clear difference in the capacity to study and re-concentration of attention. Thus, a complete normalization of the index was observed in 70.4% and 30% (p < 0.05) of the test and control groups respectively. 30% of pax having attention failures (test group) showed its further deterioration; this was not observed in the control group (p < 0.01). Daily interviewing proved a positive development of vitality and activity by 93.6 and 95.7% in the test group and 62.5 and 75% in the control group (p < 0.01). Other characteristics like asthenia, fatigability, and headache were of no significant or statistically reliable difference.

2.2.3. ECG Research

50 initial ECG were recorded in the test group (Gr.1) and 23 of those in the control group (gr.2). Their analysis revealed that 66% (33 pax) in the first group and

Table3

ECG-Syndromes	Group 1		Group 2	
	No.	%	No.	%
Stimulability	1	2	2	8.7
Stimulability	1	2	-	-
Stimulability	2	4	-	-
Short P3 syndrome	4	8	-	-
Mid-flight rhythm	-	-	2	8.7
Measuring by distance	-	-	1	4.3
Incomplete right bundle block	2	4	6	26
A-V block, Grade I	-	-	1	4.3
Partial myocardial changes	7	14	6	26
Syndromedistal myocardial	2	4	2	8.7
Low-Voltage ECG	2	4	-	-
Myocardial	33	66	8	34.8
Total	50		23	

35% (6 pax) in the second group have normal graphs. Table 3 presents the frequency of ECG-syndromes.

In the two groups the prevailing ECG-syndromes are re-polarization failures determined by peculiarities of vegetative cardiac regulation and having no inorganic character.

In the course of receiving Cell Guard™ persons In-Group 1 showed a number of ECG changes. Re-polarization irregularly diminished (data not completely reliable); a higher wave T range and normalization of ST segment in standard leads, as well as restoration of the normal RT ratio. At the same time, persons In-Group 2 showed no similar changes in their repeated ECG's. No dynamism was revealed in other ECG-syndromes.

A preliminary conclusion can thus be made that Cell Guard™ has a moderate positive effect on rehabilitation processes in atrial myocardis of children subjected to radiation exposure.

2.2.4. Hematological Indices

The initial hemoglobin and erythrocyte contents in peripheral blood were normal in both test and control groups. Thus, the average hemoglobin in the test group made up 137.4 ± 1.6 Gr/L, in the control group 132.3 ± 2.1 Gr/L. No significant changes were observed in the course of treatment. The final hemo-

globin content made up 136.9 ± 1.9 Gr/L and 129.9 ± 2.2 Gr/L in the test and control groups respectively. Similar data were obtained also for peripheral blood erythrocytes: 4.33± 0.67 x 106/l and 4.42± 0.61 x 106/l, test and control group respectively. At the time of discharge none of the persons in either group revealed changes in erythrocyte contents.

Considering the amount of water taken every day hematocrit values were analyzed. In the test group, the initial value of this index made up 36.8 ± 0.5%, in the control one 38.6 ± 0.6%. No significant changes occurred in the course of treatment and the final values made up 36.2 ± 0.3% and 39.0 ± 0.2% (test and control groups respectively).

Total peripheral blood leukocytes of the majority of persons in the test and control group alike were within the normal range. Two persons in the control group who initially had over 9 x 103 ml leukocytes showed positive changes by the time of discharge: one person with a moderate leukopenia (3.8 x103 ml) also showed a tendency to normalization. In the test group there were no significant changes in leukocyte levels: 3 persons had a moderate leukocytosis on admission and 2 persons at the time of discharge.

Persons in the control group had a normal peroxidase activity index on admission (from -9.7 to +10.7). 3 pax in the test group had certain deviations like an increase of the index up to +11.5. 1 person had a low index of -19.4. No significant changes of peroxidase activity index were revealed by the time of discharge in the test and control group alike (+8.9 to -6.3).

The study revealed no Cell Guard™ influence on the normal hematological hemostasis indices (leukocytes, erythrocytes, hemoglobin, hematocrit, peroxidase activity index).

2.2.5. Immunological Indices

The immunological state of the patients was determined by the amount of rosetta-forming T-lymphocytes, T-helpers, T-suppressors, T-active ones, and B total. Of serum indices, A, M, G immunoglobulines and lysozyme contents were determined.

The research accomplished prior to using Cell Guard™ proved that quite a number of children had deviations from the normal immune status. Thus, 55% of persons had a low per cent of T-lymphocytes; 11.7% had lower T-active and T-m ones; 45% had lower T-suppressors content; 7.8% had higher values of the latter. The majority of persons (62.7%) revealed B-lymphocytes stimulation, while 2% - their reduction. Other resistibility factors were highly variable: 20.1% had a higher A-immunoglobuline concentration; 27.4% a higher M concentration, and 29.4% a high G-immunoglobuline concentration. Lysozyme content beyond normal was registered in 58.8% of persons. The control group had a less clear deviation in their immunological state, (see table 4).

Table4

	Control Group	Test Group
T-lymphocytes % Reduction	9	55
Disto T-active lymphocytes	4	11.7
Disto T-m	6	11.7
Disto T+	12	45
B-lymphocytes Percent age Increase	4	62.7
A Ig increase	4	8
M Ig increase	12	27.4
G Ig increase	3	29.4
Lysozyme increase	15	58.8

As seen from the Table, 9% of subjects had a

reduction of T-lymphocytes contents: 4% had that of T-active ones; 6 and 12% had a reduction of Tm and Tr respectively. 4% had an Ig content beyond normal; 12% that of M Ig; 15% of G Ig, and 15% that of lysozyme. The analysis of the data obtained shows a tendency to normalization of practically all-immunological indices (p 0.05 criterion) of practically every person receiving Cell Guard™. In the control group no reliable changes in the number of persons having immune status deviations were revealed.

The accomplished analysis suggests that Cell Guard™ has multiple immunomodulus properties. However, more research is desired to confirm this.

2.2.6. Antioxidant Activity

44 persons of those receiving Cell Guard™ had an average of 6.4% increase in Glutathione Peroxidase. Moreover, 14 pax (31.8%) had 20% increase of the activity of the said enzyme, while only 2 pax (9.3%) of persons in the control group had a 20% increase. All in all Glutathione Peroxidase activity in this group decreased by the av. of 19.2%.

Persons receiving CELLGUARD had Superoxide Dismutase content increase by the average of 4.8%. Moreover, 17 pax (37.8%) had 20% and more increase of the enzyme's activity. In the control group 20% increase of the enzyme was not registered at all: on the average Superoxide Dismutase content in this group decreased by 15.4%.

Cell Guard™ receiving persons had an average increase of reduced glutathione by 8.2%; 37.5% of such persons had an increase of that by 20% and higher. In the control group reduced glutathione contents decreased by average 7.3%, while an increase by 20% and higher was noticed in 9.1% of persons.

Table 5 presents the impact of Cell Guard™ on certain indices of antioxidant blood system.

Table5

	Test Group		Control Group	
	Adm. substance	Discharge	Adm. substance	Discharge
Glutathione Peroxidase (mEq/ml)	37.0±1.1	39.4±1.1	41.8±1.3	33.8±1.7
Superoxide Dismutase (Mg/ml)	39.3±0.9	41.8±1.1	46.0±1.7	38.9±1.4
Reduced Glutathione (mEq/ml)	7.2±0.3	7.9±0.3	9.2±0.5	8.6±0.3

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EFFECTS OF CELL GUARD™ ON THE HEALTH OF CHILDREN FOLLOWING THE CHERNOBYL NUCLEAR ACCIDENT

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Biotec Foods
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INTRODUCTION

The world's increasingly unfavorable ecological conditions were complicated further by the 1986 Chernobyl nuclear accident. Contents of Strontium and Platinum radionuclides in the human body have increased 2.5 to 5 times. Up to 3% of the Republic's population have increased contents of Cesium. Between 25 and 37% of children have nitrate presence in their bodies 2 to 3 times higher than permissible levels. An excess of lead is evidenced in 57.5 to 66.8% of the population.

The unusually stressful ecological conditions resulting from the Chernobyl accident call for a rigorous and open-minded search for remedies capable of protecting and strengthening the human body under unremitting assault. One possibility identified by this research team is an antioxidant enzyme formulation produced by Biotec Food Corporation & the USA. The product, called Cell Guard™, is made entirely of organically grown wheat sprouts that have been shown to enhance the body's production of the antioxidant enzymes Superoxide Dismutase, Catalase, Glutathione Peroxidase and Methionine Reductase.

Theorizing that increased antioxidant activity might help the body defend itself against high levels of radiation and other adverse ecological conditions, the investigators devised the following study to assess the effect of Cell Guard™ on human neurological, cardiovascular, immune, antioxidant and blood circulation systems.

SUBJECTS

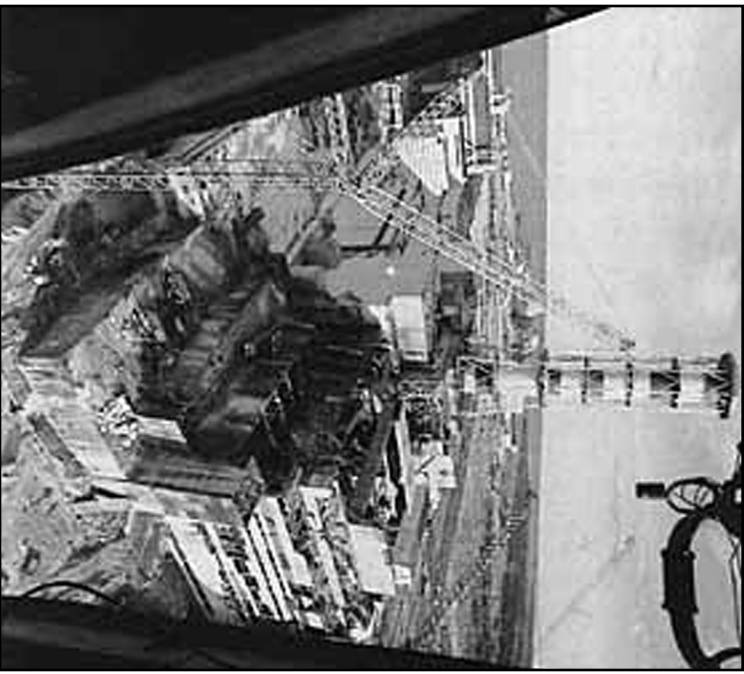
The experimental group consisted of 51 children and teenagers (aged 6 to 17), all of who reside in the Yelisk and Narovlya Districts around Gomel. These areas have Cesium contamination at the rate of 7 to 25 Ci per sq. km. The control group consisted of 25 other children living in the same areas and having similar living conditions.

METHOD

Subjects in the experimental group were administered Cell Guard™ as follows: For the first two weeks, four (4) tablets daily, taken in the morning before the first meal. After the first two weeks, two (2) tablets daily taken at the same time of day. Throughout the course of the study, subjects drank six (6) glasses of water daily. Subjects in the control group received no Cell Guard™.

RESULTS

1. Cesium Contamination - Incorporated Cesium contents showed more active dynamics in the experimental group than in the control group. A decrease of 20% or more in Cesium endogenic contents was registered with 52.4% of those who had taken Cell Guard™ and with only 5-5.3% of those who did not. While not statistically reliable, this difference is of marked scientific and humanistic interest.



and warrants additional enthusiastic study of the - effects of Cell Guard™ in diminishing Cesium contamination.

2. Immunomodulation - Blood analysis revealed improvements in the immune functions of subjects in the experimental group. Specifically, subjects who took Cell Guard™ showed a normalization of T-lymphocyte contents in the peripheral blood, an increase in their subpopulation quantities (T-Helpers, T-Suppressors and T-Active cells), and a normalization of humoral immunity. Differences between the experimental group and control group were statistically reliable.

3. Antioxidant Activity - Subjects who took the Cell Guard™ showed an increase in the activity of the key enzymes of the antioxidant system (Superoxide Dismutase and Glutathione Peroxidase) and of the restored glutathione. An increase of 20% or greater was observed in 37.8% of subjects in the experimental group, but only in 9.5% of subjects in the control group.

4. Cardiovascular System - In the experimental group, a moderately positive improvement was noted in rehabilitation processes in ventricular myocardia of children having re-polarization failures. As result is not statistically reliable, but is very encouraging and warrants further study.

5. Neurological Indications - Attention span improved in 70.4% of children in compared with 30% in the control group. M (p 0.05).

6. Side Effects - No side effects or negative chemical effects were observed in connection with the use of Cell Guard™.

DISCUSSION

The data obtained as a result of this study demonstrate a positive effect of Cell Guard™ on certain variables pertaining to the major adaptation systems of children and teenagers who are living under favorable ecological conditions following the Chernobyl nuclear accident. Specifically, subjects taking Cell Guard™ showed shed Cesium contamination, improved immune function, increased antioxidant activity, and increased attention span. A statistically not significant but encouraging improvement in cardiovascular function also was observed.

Results of this study support the use of Cell Guard™ as a dietary supplement for persons living under adverse ecological conditions such as those resulting from the Chernobyl nuclear accident.

Minsk, Belarus - June 4, 1992

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CLINICAL STUDY ON CELL GUARD'S EFFECTS ON PERSONS AFFECTED BY RADIATION AS A RESULT OF THE CHERNOBYL ACCIDENT

Supervised and carried out by - N.A. Gres - June 1, 1992

INTRODUCTION

The unfavorable ecological situation in Belarus was further aggravated by 1986 Chernobyl accident. The problem of living on the contaminated areas never became less acute: in 5 out of total 6 administrative regions with vast Cs - contaminated areas over 2 million people or 20% of its total population are living today. In comparison with the pre-accident period Sr and Pu contents (body measurements of local residents) reveal 2.5 to 5-fold increase. Up to 3% of the population have Cs incorporation exceeding permissible indices. 25 to 37% of children in some areas of Belarus have a high concentration of nitric compounds in their organisms.

The radiological situation in this republic is peculiar for the fact that a great number of its people, children and adults alike, live under continuous exposure to low excessive radiation doses. Though after the exposure a possibility of long living is real a long-term estimation of the developing effects in relation to radiation impact is difficult to determine (1, 2). First, the observed effects are revealed, with a certain frequency, only in the so-called control population groups. Second, not every person having similar parameters of radiation impact showed the effects. Third, post-exposure alterations and disorders in separate organs and functional systems may reveal years after the exposure, more often in children and teens, and easier occur to people having chronicl infectious foci, hemintoses.

It is important to consider that the exposure to low ionizing radiation doses causes pathological processes to develop gradually which insures conditions for the formation of adaptability and compensation mechanisms for rehabilitation processes. Further non-tumor consequences are represented by non-specific syndromes like functional liability of the body system, asthenia, vegetative dysfunctioning, steady metabolism failure, a low resistibility to infections, and other ailments. Besides, in the process of incorporation, the formation of tissue doses is determined by individual peculiarities of transportation and metabolism that rules both accumulation and removal of radionuclides.

The development of these processes is based on the formation of body's adaptability to the impact of unfavorable environment, which is determined, first of all by the functioning of unique de-fense systems such as immune and antioxidant ones. To protect the quantity and quality of human health in the conditions of poor ecology in the republic of Belarus it is important to develop and introduce measures supporting and strengthening defense systems, facilitating compensatory and adaptation mechanisms of separate organs and tissues and those strengthening adaptability processes.

The purpose of this study is to analyze the effect of Cell Guard™ on major adaptation systems of children and teenagers living under low ionizing radiation doses in the territory of Belarus.

1. Test Experiments

The antioxidant properties of the product have been studied within the framework of the test. The antioxidant activity of the compound was analyzed according to Malone dialdehyde accumulation kinetics in the total encephalone homogenate (laboratory rats) in comparison with that of the known alphanatocopherol acting as an antioxidant.

Methods and Materials

After decapitation of laboratory rats in low tem-

perature (0-4°C) cranae were opened and encephalon's removed; vessels and blood clots separated. 10% tissue homogenate was then prepared with water. To determine the content of endogene products the FOLCH J. et al (1957) methods were used to prepare chloroform methanol mixture of extracted lipids out of 1 mL of 10% homogenate. The extracted mixture contained ionole antioxidant preventing the formation of excess products during extraction. In vitro experiments determined the rate of malone dialdehyde formation in the biomembranes of complete encephalon homogenates in comparison with control samples. 54 laboratory rats were subjects of this experiment. .

Research Results
Antioxidant properties were analyzed within the concentration range of 10-3 to 10-8 mol. It is revealed that there is a reliable MDA accumulation kinetics decrease in the above model with the agent concentration of 10-3 by 67%, 10-4 by 61%, and 10-5, 10-6 and 10-7 by 37, 18, and 15% respectively (the data are given in relation to control ones).

The comparative analysis of alphanatocopherol antioxidant activity proved that its MDA accumulation kinetics reduction caused by this compound is lower than that caused by Cell Guard™ and makes up 25, 13 19, 12% respectively in the concentration range of 10-3 to 10-6 mol.
CONCLUSIONS

1. Cell Guard™ has definite antioxidant efficiency in concentration range of 10-3 to 10-7 mol. In 10-8 mol the antioxidant activity practically does not reveal.

2. The highest antioxidant activity of the product in the model preparations containing encephalone homogenate is revealed in 10-3 to 10-7 concentrations.

3. In the above concentration range Cell Guard™ compound is more efficient than alphanatocopherol.

2.1. Methods and Materials

The clinical study of Cell Guard™ was carried out with a group of 51 children and teenagers living in the radiation risk conditions in Yelsk and Narovy'a districts of Gomel region in Belarus. There, Cs-137 contamination makes up 7 to 25 Ci/ sq. km. 25 other of similar age formed the control group. They live in the same areas have identical living conditions.

REPORT ON THE RESULTS OF CELL GUARD CLINICAL STUDY

(Radiation Medicine Research Institute Clinic of, under the Ministry of Health, Republic of Belarus)

The unfavorable ecological conditions was further complicated by 1986 Chernobyl accident. Contents of Sr and Pt radionuclides in the human body have grown 2.5 to 5 times; up to 3% of the Republic's population have increased contents of Cs. 25 to 37% of children have nitrate presence in their bodies 2 or 3 times higher than permissible levels. The research also discovered an excess of lead with 57.5 - 66.8% of people.

With a view to protect the health of the population in the complicated ecological situation it is important to work out and to introduce remedies capable of protecting and strengthening a human body. One of the opportunities is the Cell Guard™ possessing antioxidant properties.

51 children and teenagers (aged 6 to 17) formed

the test group of people receiving the Cell Guard™ all of them residing in Yelsk and Narovy'a districts around Gomel. These areas have 7 to 25 Ci / sq. km. Cs contamination. 25 other children formed a control group. Those in the control group live in the same areas and have similar living conditions; they received no Cell Guard™. The effect of the product on the neural cardiovascular, immune, antioxidant, and blood circulation systems was under research.

The test group was given the Cell Guard™ as follows: 4 pills in the morning before the first meal of the day (during first two weeks); then 2 pills at the same time of the day (during 1 week); six glasses of water were taken daily during all this time.

Experimental study of 54 laboratory rats was aimed at the study of the Cell Guard™ antioxidant effect in the basis of malone dialdehyde accumulation kinetics in the tissue of cerebrum.

CONCLUSIONS

1. The data obtained as a result of experiments prove that in the model systems containing homogenate of laboratory animals' cerebrum. The Cell Guard™ has a higher antioxidant effect as compared to Alphanatocopherole (concentration intervals of 10-3 to 10-7 mol.)

2. Incorporated Cs contents showed more active (though without a reliable difference) dynamics in the test group than in the control one (a decrease of Cs endogenic contents was 20% and more was registered with 52.4 and 35.3% of people subjected to the study).

3. The product has a pronounced immunomodule effect which shows in normalizing T-lymphocyte contents in peripheral blood in the increase of their subpopulation quantites (Helpers, Suppressors and the T-active ones) and in normalizing of humoral immune The data is statistically reliable in comparison with the control group.

4. Persons who have received the Cell Guard™ show the increase in the activity of the key enzymes of the antioxidant system (Superoxide Dismutase, Glutathione Peroxidase and of the restored glutathione). The respective data showed their increase by 20% with 37.8% children of the test group and 9.5% of those in the control group.

The test group included 52.9% of girls and 47.1% of boys; the control group 52.0 and 48.0% respectively. Considering that both the groups had similar age and sex composition the study does not regard the difference. Certain deviations from the normal state of health were revealed in the test and control groups after medical examination (see Table 1).

Table1

Type Of Health Problem And Disease	Test Group No. of Pkx %	Control Group No. of Pkx %
Thyroid Gland Endemic Hypertensi-a-Strae	2 3.9	14 56
Ditto, Grade	2 3.9	2 8
Chronicalltitis	1 2	-
FunctionalAnxiety	3 5.9	3 12
NeuroendocrineSystem	16 31.4	3 12
Vegetativosedulypertonia	21 45	-
Chronichepatitis	2 3.9	6 60
Ductohepatit	2 3.9	-
Functionalhepatidisturbance	7 13.7	2 8
Biliroteradictosis	21 41.2	17 68
Other	7 13.7	4 16

In the test group the highest rate (90.2%) has thyroid gland endemic hyperplasia, Grade 1; second are various types of biliferous track diskinesia; third are disorders in digestis track upper sections (37.4%)

In the control group functional deviations prevail alike: biliferous track diskinesia (68.0%), then gastric and duodenal problems, and third being Grade 1 TGEH. It is important that in all cases of gastric and

duodenal disorders (gastric bulbitis, gastroduodenitis, and duodenal ulcer) remission stage was on which was proved not only by clinical methods but also by endoscopy and histology data. The category "Other" included giardiasis, adiposity, body mass deficiency, vasomotorial rhinitis in remission as well.

Persons in the test group had a total of 121 different cases or disorders, or 2.45 per person. Similar data were revealed with the control group: 60 cases of 25 persons, or 2.4 per person. The data are statistically common for the entire population of Belarus.

Since all the subjects of this study are living in areas contaminated with radionuclides a thorough radiometric control was carried out both on admission and in the course of treatment (GIB-1 WBC). As a result, all the persons were divided into three (3) groups by Cs 137 incorporation: Group 1 with 0.1 mCi/ body (conventionally accepted as normal); Group 2 0.11 to 0.3

Criteria 2 and 3 were determined by means of psychological testing which made it possible to objectively note all failures. Psychological methods here involved separate scales of adapted D. Vexler method as well as the clinical questionnaire by S.V.BAZYLCHIK et al. on revealing asthenic states on the basis of personal subjective scaling. The questionnaire is aimed at a quantitative estimation of asthenic symptoms complex 24 statement sets of psychoclinical type make up the method; every symptom or a feature was estimated in four stages and marked from (-1 to +3). Psychological testing was carried out twice (as well as the evaluation of 4, 5, 6, 7 and 8 criteria) on admission and prior to discharge, i.e. in three weeks.

Criterion 4 of hematological indices was determined with the help of TECHNICON Unit.

The antioxidant blood system was estimated by the following methods:

- Glutathione Peroxidase activity determined by the decrease of reduced glutathione in the presence of the butylyle hydroperoxide after adding hemolizate. The incubated mixture contained 0.2 M phosphate buffer pH 7.4 1 mol M EDTA, 20 mol M reduced glutathione. The initial trebutlyle hydroperoxide concentration made up 8 mol M. The samples were incubated during 4 minutes under 37°C.
- Superoxide Dismutase activity was determined according to quercetrol superoxidant dependant inhibition degree (8). The enzyme content in the sample was calculated in accordance with verification graph.
- Reduced glutathione content was determined with the help of Eirnan's reagent (11).

To estimate immunological characteristics a number of tests were carried out to evaluate T and B immune systems, as well as partic-ular resistibility of the body. Rosella formation test determined, relative and absolute contents of T and B lymphocytes; theophlyline test determined immune control T lymphocytes subpopulations, T—ac-tive lymphocytes percentage, as well as A, L and cerum immunoglobuline levels and that of lyzozyme. The methodology of these tests is described in respective publications (2, 4, 8, 9). All the subjects of this study (test and control groups alike) were given general health improvement therapy, viz.: polyvitamins, medicinal herbs infusions, oxygen cocktail, massage, exercise therapy, physiotherapy. All of them were given identical food.

Subjects in the test group received Cell Guard™ as follows: four (4) tablets in the morning 30 minutes prior to their first meal (breakfast) during first two (2) weeks; then two (2) tablets in the same time of the day during one week. The total duration of the course thus made up three weeks. All persons receiving Cell Guard™ had six (6) glasses of water every day.

The test group consisted of thirty (30) pax aged 6

to 10 (58.8%); 15 pax aged 11 to 14 (29.4%); 6 pax aged 15 to 17. (11.7%), i.e. children under 14 made up the majority (88.2%).

The control group consisted of 60% of persons under 14 years of age; 10 persons were over 15 doses; the control group WAS NOT given Cell Guard™.

All the persons were given in-patient treatment at the clinic of Radiation Medicine Research Institute. None of the subjects was informed of the use of Cell Guard™ or of its effects.

The following are the efficiency criteria used to estimate the effect of Cell Guard™:

- Subjective:**
 - Asthenia
 - Fatigability
 - Headache
 - Vitality
 - Activity
- Memory and Attention** (data obtained by Test 6 and Test 11 for children, acc. to Vexler).
- Qualitative Estimation of Asthenia Symptoms** (by S. BAZYLCHIK questionnaire based on subjective scaling).
- Hematological Indices:**
 - Hemoglobin.
 - Erythrocytes.
 - Leukocytes.
 - Hematocrit.
 - Neutrocytes.
 - Peroxidase activity index.
- Blood Antioxidant System:**
 - Superoxide Dismutase.
 - Glutathione Peroxidase.
 - Reduced glutathione.
- Immunological Tests:**
 - T-lymphocytes and their subpopulations in peripheral blood.
 - B-lymphocytes.

- A, M, G immunoglobulines of the blood serum.
- Blood cerum lyzozyme.
- Radiochemical Endoecological Status Indices:**
 - Cs-137 incorporation.
 - Nitrate contents in uraa.
 - Lead contents in blood and uraa.
- 7. ECG**
- 8. Radiochemical Endoecological Status Indices:**
 - Cs-137 incorporation.
 - Nitrate contents in uraa.
 - Lead contents in blood and uraa.
- Immunological Tests:**
 - T-lymphocytes and their subpopulations in peripheral blood.
 - B-lymphocytes.

Other methods were applied to verify the diagnosis, viz. fibrogastrosocopy (FGS) stomach mucous membrana biopsy with a further histological analysis, ultra-sonic tests of internal organs and of the thyroid gland.

Criterion 1 was registered daily by qualified personnel after an interview and examination of every person. The subjects were to estimate 1 every day themselves attributing the amount of points (10-point scale) to asthenia, fatigability, headache, vitality, and activity levels.

mCi/body was considered as having a tendency of radionuclides accumulation; Group 3 with over 0.30 mCi/body (high Cs-137 content).

Table 2 gives the distribution of persons per groups.

Table2

Who's Body Counting Data	Test Group No. of Pkx %	Control Group No. of Pkx %
Up to 0.1mCi/body	30 58.8	8 32
0.11 - 0.3mCi/body	13 25.5	8 32
Over 0.30mCi/body	8 15.7	9 36
	Total 51 Pax	Total 25 Pax

The above data shows that 41.2% of the test group and 68.0% of the control group have Cs incorporation higher than NORMAL

In addition to radiometric control contents of nitric components in urine was determined by the method reducing nitrates to nitrites with dust zinc.

SPECTRORAYS-5000 reontgen fluorescent analyzer made by TRACOR X-RAY was used to determine lead content in blood and urine.

All the data obtained were processed with the help of IBM AT computer.

2.2. Results

2.2.1. Radiochemical Endoecological State

The whole body measurements of Cs-137 incorporation in the course of in-patient treatment showed a decrease of these indices: 13 persons in the test group having 0.11 to 0.3 mCi/body on admission had a general decrease of Cs incorporation by 24.1 ± 2.7%. Out of these 13, 5 pax (38%) the decrease made up 6.3 to 20% of the initial level; 4 pax (30.8%) 21 to 30% of the initial level; 4 others over 31%. The maximum decrease made up 38.4%.

In a similar control sub-group (0.11-0.3 mCi/body) of 8 persons, 5 had a decrease of 18.8 ± 5.6% of the initial level; 5 pax 6 to 20%; 1 22.3%; 2 over 31%. In this group variability of the index was as high as 1.2 to 46.2%.

8 pax in the test group with initial Cs incorporation of 0.31 mCi/ body and higher revealed an average reduction by 19.8 ± 2.1%; 5 pax up to 20%, and 3 pax 21 to 35.1%. In a similar control group (9 persons) whole body counting registered 14.0 ± 3.3% reduction, 6 pax up to 20%, and 3 pax up to 30.4%.

The analysis of radiometric data thus proves that all persons show a tendency of Cs-137 incorporation reduction, which is clearer in the test group. There 52.4% of persons had the whole body measurements indicating 21% and more reduction in comparison with the initial data (35.3%, p> 0.05 of persons in the control group). In the control group the majority of persons (64.7%) had the reduction of Cs contents up to 20% only (47.6%, p> 0.05, in the test group).

As for nitrates, subjects in both groups with 80 mg/L nitrate contents in the urine do not reveal any reliable difference in such at the end of the course.

Persons in the test group with nitrate contents of 100 mg/L and higher had 4 to 5-fold reduction of those at the end of the course: from 114-200 mg/L before receiving Cell Guard™ down to 20-50 mg/L after the course. Since this was a small group of 8 pax only with no counterparts in the control group it would be reasonable to carry out a particular study of Cell Guard™ effects on nitrate contents reduction.

Lead contents in the blood of 7 pax and 5 pax in the test and control groups respectively was determined. Persons who received Cell Guard™ showed a considerable reduction at the end of the course. However, it is not possible to draw a conclusion on Cell Guard™ effects on reducing lead contents due to a limited number of observations.

2.2.2. Psychological Tests

The study of Cell Guard™ influence on psychoneurological state revealed that the groups were not homogeneous. Thus, a special questionnaire revealed asthenic state of 14.9% of persons in the test group, while none of those in the control group (p<0.05). No comparative analysis can thus be done. It should be noted, however, that persons in the test group had positive changes after receiving Cell Guard™: 5 pax (71.4%) came to normal state completely, one person (14.3%) had a slight growth, and one (14.5%) showed no changes. The asthenia index in the test group at the end of the course was considerably lower than that in the control group; it went down by 1.72±1.327 points compared to 0.09±0.801 (p> 0.05) in the control group.

Memory characteristics analysis according to Vexler scale showed that an average improvement