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# JOURNAL OF NEW CENTURY INNOVATIONS

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# METABOLISM REGULATOR IN PATIENTS WITH CHRONIC HEART FAILURE AND ANEMIA OF CHRONIC DISEASES

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## ABSTRACT

Goal. To study the role of hepcidin as a regulator of iron metabolism and a mediator of inflammation in elderly and senile patients with chronic heart failure (CHF) and anemia of chronic diseases (ACD).

Material and methods. In 14 patients with CHF with ACD, 14 patients with CHF without anemia and 8 patients without CHF and anemia (control group) of elderly and senile age, the levels of hemogram parameters, ferrokinetics (serum iron, ferritin, transferrin, erythropoietin, hepcidin), inflammation [C-reactive protein (CRP), interleukin-6 (IL-6)] and the relationship between hepcidin and the named indicators.

Results. In patients of the control group, normal levels of hepcidin (9.17±0.97 ng/ml) and the only significant association of hepcidin with ferrokinetics were revealed – serum iron (r(S)=0.480, p=0.032). In the CHF group without anemia, normal levels of hepcidin (12.01±1.19 ng/ml) and two significant associations of hepcidin with ferrokinetics were also revealed – ferritin [r(S)=0.525, p=0.001] and transferrin [r(S)=-0.343, p=0.044]. In the CHF group with ACD, significantly elevated levels of hepcidin were detected (23.81±3.63ng/ml) relative to CHF without anemia (p=0.008) and the control group (p=0.003) and five significant correlations of hepcidin with hemogram parameters – hemoglobin [r(S)=-0.461, p=0.043] and the average concentration of hemoglobin in the erythrocyte [r(S)=-0.437, p=0.009]; ferrokinetics – ferritin [r(S)=0.596, p<0.0001] and transferrin [r(S) =-0.474, p=0.004]; inflammation – CRP [r(S)=0.561, p<0.0001].

Conclusion. Elevated levels of hepcidin in CHF patients with ACD and the formation of hepcidin bonds with hemogram and ferrokinetics indicators reflect its role as a regulator of iron metabolism, and the relationship with the indicator of inflammation is its role as an inflammatory mediator involved in the development of ACD in elderly and senile CHF patients.

**Key words:** hepcidin, chronic heart failure, anemia of chronic diseases, elderly and senile age.

## INTRODUCTION

Hepcidin is secreted in the liver under the influence of proinflammatory cytokines,

mainly interleukin–6 (IL-6), which acts as a trigger for the development of anemia of chronic diseases (ACD).ACD is anemia that occurs in patients with acute or chronic activation of the immune system due to various infectious and non–communicable diseases. Other names of ACD in the literature are "inflammatory anemia" or "cytokine-induced" anemia, which reflects the connection of this anemia with the inflammatory process underlying it.

Previously, a decrease in hepcidin levels was detected in iron deficiency anemia

(IDA), and conversely, a significant increase in hepcidin levels in patients with inflammatory and autoimmune diseases, infections, sepsis, intestinal diseases, multiple myeloma, burns, as well as in patients with oncological diseases and chronic kidney diseases – that is, diseases with which ACD develops most often.

At the same time, the literature data on the level of hepcidin in patients with chronic heart failure (CHF), in the progression of which, as is known, systemic inflammation plays an important role, and which is characterized by the development of ACD, are contradictory. Some researchers have revealed an increased level of hepcidin, and others – a reduced one, in some studies it has been shown that hepcidin does not play a major role in the pathogenesis of anemia in patients with CHF, and in others, on the contrary, it has been shown that hepcidin is an important mediator of ACD in patients CHF, since it is a protein of the acute phase of inflammation and at the same time a regulator of metabolism iron provides a link between inflammation and the resulting anemia. However, the contribution of hepcidin to the development of ACD in elderly and senile patients with CHF, who are characterized by high comorbidity, including the presence of various chronic inflammatory diseases, has not been sufficiently studied. It is unclear whether hepcidin manifests its role as a regulator of iron metabolism and at the same time a mediator of inflammation in patients with CHF with ACD of elderly and senile age, and if so, to what extent. ACD in this age group This group significantly increases the risk of cardiovascular events and is more common than

other anemias, worsens the prognosis and increases mortality. The aim of the study was to study the role of hepcidin as a regulator of iron metabolism and a mediator of inflammation in elderly and senile CHF patients with ACD.

## MATERIALS AND METHODS OF RESEARCH

The study included 36 elderly and senile patients (from 74 to 90 years old) with coronary heart disease: 14 CHF patients with ACD (CHF group with ACD), 14 patients with CHF without anemia (CHF group without anemia) and 8 patients without clinical manifestations of CHF and laboratory signs of anemia (control

group). Inclusion criteria. The groups of CHF with ACD and CHF without anemia included patients hospitalized for CHF of functional class III-IV (FC) according to NYHA with moderate renal impairment (serum creatinine ≤180 mmol/l) at the moment receipts. The CHF group without anemia and the control group included patients with hemoglobin levels >12 g/dl. The group of CHF with ACD included patients (both men and women) with hemoglobin levels <12 g/dl, percentage of transferrin saturation with iron (%NTJ) <20%, as with absolute iron deficiency

(ferritin level <100 mcg/l), and with functional iron deficiency (ferritin level >100 and <300 mcg/l) and the absence of proven chronic blood loss.

Exclusion criteria: megaloblastic, hemolytic, aplastic anemia, autoimmune and oncological diseases, primary kidney diseases. All participants were examined for: hemogram parameters (hemoglobin [HGB], red blood cell count [RBC], average erythrocyte volume [AEV], average hemoglobin content in erythrocyte [AHCE], average hemoglobin concentration in erythrocyte [AHCE], color index [CI]); ferrokinetic indicators (serum iron, ferritin, transferrin, erythropoietin, hepcidin); indicators of inflammation (C-reactive protein [CRP], interleukin-6 [IL-6]); for

estimates of the severity of CHF are the level of N-terminal propeptide of cerebral natriuretic peptide (NTproBNP). % NTJ was calculated using the formula: serum iron (mmol/l)×3.98/transferrin (g/l). Blood sampling was performed on an empty stomach in all patients. To assess the hematological parameters, blood samples taken in tubes with ethylenediaminetetraacetic acid were used. For the rest of the studies, serum obtained by centrifugation of blood samples during 15 min at +6°C, 3000 rpm. CRP, ferritin and transferrin were studied by immunoturbidimetric

using the SAPFIR 400 automatic analyzer method in accordance with the instructions of the reagent manufacture. Hepcidin (biologically active isoform hepcidin-25), IL-6, erythropoietin and NT-proBNP were studied by enzyme immunoassay. The following test systems were used for research: "NT-proBNP", «Erytropoitin» (EPO), «Human IL6 Platinum ELISA», "Hepcidin 25 (bioactive) ELISA".

To exclude the source of blood loss in patients CHF with ACD performed esophagogastroduodenoscopy and colonoscopy, and also examined feces for latent

blood by immunochromatographic method in accordance with the instructions of the reagent manufacturer. To assess cardiac hemodynamic disorders, all patients underwent transthoracic echocardiography on an Aplio 500 ultrasound machine

according to the standard protocol. To assess the duration of CHF, the frequency of hospitalizations per year for decompensation in CHF patients with ACD and CHF without anemia medical records (outpatient records, extracts from previous hospitalizations) were analyzed. The severity of CHF was assessed according to the NYHA classification. The severity of chronic kidney disease was assessed according to the KDOQI classification. The glomerular filtration rate (GFR) was calculated using the CKDEPI formula. The reference values of the studied indicators were determined in the control group.

The differences were considered statistically significant at $p<0.05$.

To assess the role of hepcidin as a regulator of iron metabolism and a mediator of inflammation in the development of ACD investigated the presence and strength of associations between hepcidin levels and levels of hemogram, ferrokinetics and inflammation in each group of patients. Then, correlation coefficient matrices were built for each group, and graphical correlation diagrams were used to visualize the relationships. For The Spearman correlation coefficient r(S) was used to estimate the degree of monotonic coupling. After determining the individual significance

of the correlation coefficients (that is, in pairs), the Benjimini-Yekutieli correction for multiple comparisons was used to determine their group significance in each group of patients.

## THE RESULTS AND THEIR DISCUSSION

The groups of CHF patients with ACD and CHF without anemia were comparable in gender, age, functional classes (FC) of CHF (NYHA), levels of NT-proBNP, ejection fraction (EF) and cardiac comorbidity. At the same time, significant differences in extra-cardiac comorbidity were revealed: the frequency of type 2 diabetes mellitus, chronic kidney disease (stages 2 and 4), but without significant differences in GFR. In addition, there is a tendency to a difference in the incidence

of pneumonia. Since the compared groups differed in the presence of anemia

(CHF with ACD) or its absence (CHF without anemia), significant differences in hemogram parameters between the groups are expected.

Significant differences in ferrokinetic parameters were also revealed: serum iron (in patients with CHF with ACD is less, $p<0.001$), erythropoietin (in patients CHF with ACD is greater, $p=0.002$) and hepcidin (in patients CHF with ACD is higher, $p=0.008$), however, the differences in ferritin and transferrin levels were not significant.

In terms of inflammation, significant differences between the compared groups were revealed in CRP (in patients with CHF with ACD higher, $p=0.020$), while no significant differences in IL-6 were found ($p=0.456$). But at patients with CHF with ACD were found to have significantly increased IL-6 levels compared with the control group ($p=0.001$). Due to the fact that a significant increase in the level

of hepcidin, as well as CRP, which are proteins of the acute phase of inflammation, was detected only in patients CHF with ACD was not detected in patients with CHF without anemia, while at the time of hospitalization for CHF FC, the levels of NT-proBNP, PV and cardiac comorbidity of the group were comparable, in order to understand the causes of their elevated levels only in patients with CHF with ACD The frequency of inflammatory diseases, the frequency of hospitalizations per year for decompensation and the duration of CHF were analyzed. It was revealed that in the CHF group with ACD there was a high incidence of pneumonia ($p<0.05$), patients with CHF duration of more than 5 years ($p=0.002$) and the number of hospitalizations 4-5 times a year ($p=0.0002$) prevailed, and conversely, in the CHF group without anemia, patients with CHF duration of less than 5years prevailed ($p=0.02$) and the number of hospitalizations 2-3 times a year

($p=0.0002$). Ferrokinetic indicators, unlike hemogram indicators, do not have significant links between with the exception of: ferritin and erythropoietin, between which a negative relationship was revealed, hepcidin and serum iron, between which a positive relationship was revealed. Two indicators of the hemogram: HGB and RBC are associated with the indicator of ferrokinetics – serum iron, having positive associations with it. It is noteworthy that in the control

group, the indicators of inflammation do not correlate with any of the indicators of ferrokinetics, including hepcidin, and hepcidin has no direct links with any one of the indicators of a hemogram, including hemoglobin. At the same time, the connections between the ferrok-netic parameters detected in the control group (positive between hepcidin and serum iron, negative between ferritin and erythropoietin) are lost. At the same time, there are negative associations of transferrin with ferritin and hepcidin, and a positive association of ferritin with hepcidin, which were not present in the control group. That is, a new "inflammatory" triad "ferritin–transferrin-hepcidin" is being formed, all indicators

of which are proteins of the acute phase of inflammation, forming connections with hemogram parameters. Also, in the CHF group without ACD, there is a positive relationship between the indicators of inflammation: CRP and IL-6, which was not present in the control group.

At the same time, ferrokinetic indicators form numerous connections with hemogram and inflammation indicators: significant correlations of CRP with ferritin and hepcidin (positive), transferrin (negative), as well as with IL-6 (positive), and IL-

6 forms positive bonds with ferritin and erythropoietin. In the group of CHF without ACD, these connections are weak, or they did not exist.

According to the literature, various factors may be involved in the development of anemia in patients with CHF, causing a decrease in iron content in the body: microblood loss due to the use of antiplatelet agents and anticoagulants, insufficient intake of iron with food due to decreased appetite, malabsorption due to decreased absorption of the gastrointestinal mucosa, the need for repeated blood collection due to the severity of the condition, hemodilution, while in elderly and senile patients a combination of several factors is likely. But the contribution of these factors to the development of anemia in patients with CHF with ACD, it should not be considered significant, since they also occurred in patients with CHF without anemia, since the severity of CHF compared groups were comparable.

A decrease in erythropoietin synthesis due to reduced renal perfusion in CHF, as another possible mechanism for the development of ACD, is also not obvious, since in CHF patients with ACD compared with patients CHF without anemia was found to have a significantly increased level erythropoietin. It is known that systemic hypoxia, hypotension and activation of the renin-angiotensin-aldosterone system, characteristic of severe CHF, may have a greater effect on increasing erythropoietin synthesis than reduced renal perfusion due to reduced cardiac output and the negative effect of cytokines on reducing erythropoietin synthesis. An increase in erythropoietin levels can also be caused by ischemic bone marrow damage due to systemic hypoxia and impaired erythropoietin uptake. But despite the increased levels of erythropoietin, compensation anemia does not occur, which may be explained by the development of erythropoietin resistance under the influence of cytokines. Obviously, the main cause of the development of ACD in elderly and senile CHF patients should be considered systemic inflammation, characteristic according to the literature for CHF, the severity of which correlates with the severity of CHF and which causes immune activation and iron deficienc. The above is confirmed by the findings in patients CHF with ACD elevated levels of proinflammatory cytokine IL-6, as well as proteins of the acute phase of inflammation: ferritin, CRP and hepcidin, and its elevated level distinguishes ACD from IDA. It is believed that even with very mild chronic inflammatory conditions, a moderate excess of hepcidin may be enough to disrupt the balance and lead to iron deficiency and the development of ACD.

In addition, the aging process is accompanied by changes in iron metabolism and higher levels of hepcidin with a parallel increase in levels IL-6 and CRP, and pronounced inflammation, as shown, is accompanied by high levels of hepcidin and significant correlations with inflammatory markers: CRP and IL-6.

Due to the fact that elevated levels of hepcidin, as well as CRP, were detected only in patients CHF with ACD was not detected in patients with CHF without anemia,

while at the time of hospitalization, the compared groups were comparable in severity of CHF, obviously, the determining factor for the development of ACD in patients with CHF is not the severity of CHF at the time of hospitalization, but

the long duration of CHF, the high frequency of hospitalizations for decompensation, as well as the high frequency of pneumonia, which exacerbates the inflammation inherent in patients with CHF decompensation. Probably, these reasons

lead to constant cytokine aggression, which causes increased synthesis

of proteins of the acute phase of inflammation – ferritin, CRP and hepcidin.

Previously, links have been shown between iron deficiency and the frequency of repeated hospitalizations, the development of anemia and decompensation of CHF, anemia and longer hospital stay.

Therefore, taking into account the higher frequency of hospitalizations due to decompensations, as well as the longer duration of CHF detected in CHF patients with ACD than in CHF patients without anemia, it should be assumed that CHF patients with ACD, obviously, are constantly in a state of chronic inflammation, which is aggravated by decompensation of CHF, as well as with the development of pneumonia and other inflammatory diseases (urinary infection, trophic ulcers), and this state of chronic inflammation obviously persists in the period between hospitalizations, and ACD is a consequence of this chronic inflammatory process.

The detection of elevated IL-6 levels in CHF patients with AHZ and in CHF patients without anemia confirms the chronic activation of the immune system inherent in CHF decompensation, regardless of the presence or absence of anemia. Therefore, in patients with CHF with ACD, as well as in patients with CHF without anemia, the levels of ferritin, reflecting not only the iron reserves in the depot, but also being a protein of the acute phase of inflammation, are significantly increased relative to the control group.

But the severity of the systemic inflammatory response in CHF patients with ACD is obviously greater and longer. Since hepcidin synthesis is carried out mainly under the influence of IL-6, it remains unclear why, with elevated levels of IL-6 in both compared groups, the level of hepcidin in patients with CHF without anemia is not increased? Obviously, this is due to the fact that hepcidin synthesis is regulated not only by inflammation, but also by iron accumulation and erythropoiesis activity. It is also impossible to exclude participation in

synthesis of hepcidin of other proinflammatory cytokines, in particular, IL-1β, tumor necrosis factor α. It is impossible not to take into account the influence of patients' age on the development of anemia as an additional factor, since aging of the body is associated with low levels of transferrin and elevated levels of ferritin, hepcidin, IL-6 and CRP. Revealing only the fact of an increased level of hepcidin is not enough to understand its effect on all links in the development of ACD in elderly and senile CHF patients. The results of the rank correlation analysis made it possible to analyze the effect of hepcidin on hemogram, ferrokinetics and inflammation in each group of patients and evaluate its role not only as a regulator of iron metabolism, but also as a mediator of inflammation. Taking into account the data obtained, it should be assumed that in patients of the control group, that is, in the absence of CHF and anemia, hepcidin, having normal levels, realizes its role as a regulator of iron metabolism through a positive relationship with serum iron,

and through it regulates the level of hemoglobin, because it has no direct links with any of the hemogram indicators, including hemoglobin. In the CHF group without anemia, hepcidin, having also normal levels, realizes its role as a regulator of iron metabolism through a positive relationship with ferritin and a negative relationship with transferrin. At the same time, since ferritin, transferrin and hepcidin are proteins

of the acute phase of inflammation, the role of hepcidin as an inflammatory mediator is also outlined, but hepcidin obviously does not show an explicit role as an inflammatory mediator, since there are no links between hepcidin and inflammation indicators. In the CHF group with ACD, hepcidin, having elevated levels, forms five significant correlations with hemogram, ferrokinetics and inflammation, which obviously reflects the role of hepcidin as a regulator of iron metabolism, since iron depot increases through a positive association with ferritin, and iron transport decreases through a negative association with transferrin, but also as an inflammatory mediator That is, hepcidin, reacting to systemic inflammation in patients with CHF with ACD, becomes a key figure, since various types of connections, forming "bridges" between the indicators of hemogram, ferrokinetics and inflammation. Previously, the relationship of hepcidin with hemogram, ferrokinetics and inflammation in patients with AHZ was studied by many authors. Thus, the above levels of hepcidin and the negative correlation of hepcidin with hemoglobin were revealed, the positive correlation of hepcidin – with the ferrokinetic index ferritin is. However, the data on the correlations of hepcidin with indicators of inflammation (CRP and IL-6) are contradictory. Therefore, research in this direction should be continued, because studies in which, in addition to searching and analyzing the links between hepcidin levels and levels of hemogram, ferrokinetics and inflammation, attempts would be made to trace the formation of these links and trends towards their formation from the control group to CHF, and then from CHF to CHF with AHZ, which they demonstrate graphical correlation diagrams, which we have not found. Limitations of the study. It should be emphasized that this research, which is exploratory in nature, is limited to a small sample and mainly the elderly and senile age of the subjects.

## CONCLUSIONS

Taking into account the inconsistency of the literature data on hepcidin levels and its role in CHF patients with ACD, it should be noted that the data obtained allow

us to characterize the role of hepcidin both as a regulator of iron metabolism and as a mediator of inflammation in elderly and predominantly senile CHF patients (median age 84 years), with "advanced" stages of CHF, long-term patients with low adherence to treatment (as indicated by frequent hospitalizations), who had at the time of their inclusion in the study not only decompensation CHF, but also complications in the form of various inflammatory diseases. The obtained data also suggest that the role of hepcidin as a regulator of iron metabolism and a mediator of inflammation may persist until old age.

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# KIDNEY DYSFUNCTION IN CHRONIC HEART FAILURE

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## ABSTRACT

The aim of the study was of the importance of impaired renal function in heart failure.

Material and methods. 42 patients who received inpatient treatment in 2017–FC II–IV, complicated by FC II —III CHF were examined.

Results. Urea levels and creatinine values (98.80±11.67 mmol/l) in both groups of the examined did not exceed normal values. Before the start of treatment, the level of Cystatin-C was 1.43 ± 0.06 mg / l in the main group of patients. In the control group, this indicator was 0.83 ± 0.01 mg / l. It was reported that the content of cystatin-C in the main group was 1.7 times higher than in the control group. After complex treatment, these values were 0.6 ± 0.01 mg / l in the main group and 0.81 ± 0.01 mg / l in the control group, respectively.

Conclusion. Therefore, cystatin C and β2 — MG can be considered as an early sign of tubulointerstitial dysfunction and fibrous changes in the kidneys. The presence of renal dysfunction worsens the course of CHF, and also worsens the quality of life of patients.

**Key words:** chronic renal failure, creatinine, chronic heart failure, beta-2-microglobulin.

## INTRODUCTION

Chronic heart failure is a syndrome that develops as a result of a violation of the heart's ability to fill and/ or empty, occurring in conditions of imbalance of vasoconstrictor and vasodilating neurohormonal systems; accompanied by inadequate perfusion of organs and tissues of the body and manifested by a complex of symptoms: shortness of breath, weakness, palpitations, increased fatigue and fluid retention in the body. CHF can be caused by many diseases of the cardiovascular system, the most common of which include coronary heart disease, hypertension, endocarditis and rheumatoid heart defects. The weakening of the heart muscle leads to the inability to pump blood normally, as a result of which the amount of blood released into the vessels gradually decreases. Cardiorenal syndrome (CRS) is a pathological interdependent condition involving the heart and kidneys, developing as a result of acute or chronic dysfunction of one of the organs, followed by acute or chronic dysfunction of another organ. includes various acute and chronic disorders in which both the heart and the kidney may be the primary affected organ. The kidneys, being an organ involved in

important metabolic processes, regulate humoral The systems involved in microcirculation processes are susceptible to acute and chronic effects in various cardiovascular diseases (CVD) and affect the formation and progression of cardiovascular pathology. Renal dysfunction is associated with a higher incidence of recurrence of myocardial ischemia, myocardial infarction (MI), stroke, serious hemorrhagic complications, acute heart failure, atrial and ventricular fibrillation. Even a slight decrease in kidney function significantly worsens the course of the underlying cardiac pathology, at the same time. There are numerous data in the literature regarding the diagnostic values of biomarkers (creatinine, cystatin C) and the calculated index (creatinine clearance) for determining the functional state of the kidneys. The concentration of cystatin C is inversely correlated with the glomerular filtration rate (GFR), is a marker of glomerular dysfunction even if there is no increase in creatinine, and gives a more accurate approximation to the real values of GFR than the creatinine level. In, it was proved that cystatin C is a strong and independent risk factor for cardiac mortality in patients with severe heart failure with normal or slightly impaired renal function. There are also studies devoted to the study of beta-2-microglobulin ($\beta^2$MG) in patients with CHF. $\beta^2$MG is an independent predictor of mortality in the elderly, but the prognostic role of beta$^2$-microglobulin in heart failure has not been fully studied. In the kidneys, beta-2-microglobulin is filtered by glomeruli and reabsorbed back into the tubules. The detection of $\beta^2$ MG in urine indicates a violation of renal filtration. Therefore, it is used as a marker for the diagnosis and monitoring of tubulointerstitial kidney damage.

## MATERIALS AND METHODS OF RESEARCH

The study was conducted in the cardiology departments of the multidisciplinary clinic of SamMU. 42 patients who received inpatient treatment in 2017–FC II–IV, complicated by FC II —III CHF were examined. The diagnosis of CHF was made on the basis of anamnesis, complaints, clinical and laboratory data and recommendations of the European Association of Cardiologists "ESC Recommendations for the diagnosis and treatment of acute and chronic heart failure 2016". The patients were divided into the main group of patients with CHF with renal dysfunction — 18 patients (women 7(38.8%), men 11 (61.1%), average age 65.3±8.2 years) and without dysfunction — 24 patients (women 10 (41.6%), men 14 (58.4%), average age 64.2±7.3 years). If we consider the comorbid conditions, the following changes were revealed, in the first group of CHF patients with renal dysfunction, stable tension stenocardia I - II FC - in 25.8%, III FC — in 18.5% of patients. According to the NYC classification, CHF I FC was observed in 2.3% of patients, II FC in 63.7%, III FC in 34.2% and IV FC in 4.9% of patients, hypertension was diagnosed in 96.4% of patients. Anemia of mild and moderate severity was observed in 65.6% of patients, hyperlipidemia in 64.3%. It is known from the life history of patients of the second group that stable

angina pectoris of tension I — II FC was observed in 22.3%, III FC in 19% of patients, and 90.2% suffered from hypertension. Anemia of mild degree was observed in 31.1%, hyperlipidemia - in 54.0% of cases. There were no changes in clinical urine tests and renal echosonography results indicating the presence of CKD. Patients with acute heart failure, acute myocardial infarction, and nesta were excluded from the study- severe angina pectoris, pericarditis, rheumatic heart diseases. All patients underwent general clinical (UAC, OAM), biochemical studies (ASAT, ALAT, total bilirubin, urine wines, creatinine, total protein, blood glucose d/e and n/e), cystatin C, the level of β2 — MG in urine, as well as instrumental methods of ECG and echocardiography, were used as an indicator of renal tubular functions in this study Statistical processing of the research results was carried out using the Microsoft Excel spreadsheet package 2019. The parameters were described as: arithmetic mean ± standard deviation (M±SD). To study the relationship between quantitative variables, correlation analysis was used with the calculation of Pearson's linear correlation coefficient or Spearman's rank correlation coefficient. The differences were considered significant at a significance level of $p<0.05$.

## THE RESULTS AND THEIR DISCUSSION

Urea levels and creatinine values (98.80±11.67 mmol/l) in both groups of the examined did not exceed normal values. Before the start of treatment, the level of Cystatin-C was 1.43 ± 0.06 mg / l in the main group of patients. In the control group, this indicator was 0.83 ± 0.01 mg / l. It was reported that the content of cystatin-C in the main group was 1.7 times higher than in the control group. After complex treatment, these values were 0.6 ± 0.01 mg / l in the main group and 0.81 ± 0.01 mg / l in the control group, respectively. It was noted that GFR calculated using cystatin C revealed lower values (84.12±12.78 and 85.25±11.87 ml/min/1.73 m2, respectively), which indicated the presence of a decrease in GFR and impaired glomerular filtration function of the kidneys in patients. A decrease in GFR, determined in relation to cystatin C, was observed in 45.3% of patients. It follows from this that the majority of patients with CHF of ischemic origin had chronic renal dysfunction in the absence of primary renal pathology. In this regard, it is advisable to use it in assessing the functional state of the kidneys. Based on the conducted comprehensive studies, it was found that the content of β2 — MG in urine was significantly reduced (P0.001) to 6.4 ± 0.2 mg / ml in the main group. In the control group, that is, in patients with CHF without dysfunction, these values were 7.04 ± 0.2 mg/ml before treatment, and then 6.42 ± 0.2 mg /ml, and the values did not significantly differ from each other (P0.05). When studying the correlation between microglobulin β2 and cystatin-C, positive correlations of r = 0.59 (R0.05) were recorded in the main group, respectively. Thus, fibrous changes in the proximal tubules of the kidney accompanied by CHF with dysfunction enhance tubulointerstitial processes in it, which, in turn, leads to an increase in the content of

cystatin-C in the blood.

## CONCLUSIONS

The results of the conducted studies have shown that even a slight decrease in kidney function exacerbates the course of the underlying cardiac pathology, increasing the frequency of complications. DP can be considered as a possible marker of CHF progression. It can also be concluded that the majority of patients with CHF of ischemic etiology have signs of renal dysfunction in the absence of clinical manifestations. Therefore, cystatin C and β2 — MG can be considered as an early sign of tubulointerstitial dysfunction and fibrous changes in the kidneys. The presence of renal dysfunction worsens the course of CHF, and also worsens the quality of life of patients.

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# DIABETES MELLITUS with ARTERIAL HYPERTENSION

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## ABSTRACT

The aim of the study was to identify differences in the course of hypertension in individuals with and without impaired carbohydrate metabolism.

Material and methods. 60 people were examined: 29 with hypertension, 31 with hypertension and DM.

Results.The values of the lipid spectrum between the patients of the two groups did not significantly differ, except for the figures of total cholesterol, which was higher in patients with disorders in carbohydrate metabolism. Uric acid levels also did not differ between the groups. Creatinine concentration was higher in people with diabetes mellitus, but within the limits of the reference values. All the average values for systolic and diastolic blood pressure in the daytime and at night were recorded at a significantly higher level in people suffering from combined pathology. However, there were no significant differences in indicators characterizing the size of the heart and the mass of the left ventricular myocardium between the groups.

Conclusion. It is necessary to be more careful and dynamically monitor lipid and carbohydrate metabolism, indicators of filtration activity of the body, blood pressure levels in order to prevent the occurrence of catastrophic consequences from the heart and kidneys.

**Key words:** arterial hypertension, diabetes mellitus, kidneys.

## INTRODUCTION

Arterial hypertension (AH) and diabetes mellitus (DM) remain one of the most common diseases on the globe today. Their prevalence in the global community

is constantly growing and is projected to increase in the coming years. In addition, DM and AH are two interrelated pathologies that have a powerful addictive damaging effect, with rapid development of complications aimed at several target organs at once: the heart, kidneys, cerebral vessels and retina. And as a result, there is a significant increase in the risk of stroke, ischemic disease heart failure, congestive heart failure, other cardiovascular diseases and events that significantly increase disability and mortality among patients. In general, 80% of such patients die due to cardiovascular diseases: 65% - from acquired heart pathologies, 15% — from cerebral circulatory disorders. Among patients with arterial hypertension, the prevalence of DM is 2-2.5 times higher than among people without high blood pressure (BP). In addition, the risk of diabetes over the next 5 years in patients with hypertension is 2.5 times higher, than

in the general population. The probability of developing hypertension on the background of diabetes increases depending on

the type of diabetes, the age and ethnicity of the patient, the presence of obesity and other components of the metabolic syndrome. As a result, more than 80%

of patients with type II diabetes suffer from elevated blood pressure. The course of arterial hypertension in patients with DM is characterized by a number of features. First of all, this is a high pulse pressure, which reflects an increase in the stiffness of medium - and large-caliber arteries and is a predictor of a poor prognosis. Increased pulse pressure 10 mmHg correlates with an increase in mortality due to cardiovascular diseases by 20%. In patients with diabetes mellitus, high blood pressure is often recorded at night, there is a violation of the circadian rhythm (normally blood pressure at night is 10-20% lower compared to the daytime period). Pronounced fluctuations in blood pressure during the day, as well as a tendency to orthostatic hypotension, are due to a violation of blood pressure regulation and the presence of neuropathy.

In our study, we decided to analyze the instrumental and laboratory parameters of patients suffering from hypertension in combination and without diabetes.

## MATERIALS AND METHODS OF RESEARCH

The study included persons with type II diabetes and hypertension (BP>140/90 mmHg). Persons with secondary hypertension, congestive heart failure (HF) of functional class III—IV according to NYHA, and the consequences of a heart attack were not analyzed myocardial or surgical intervention on the heart.

60 patients were studied: 29 people with elevated blood pressure, 31 patients with hypertension were accompanied by a violation of carbohydrate metabolism.

An ECG was recorded in 12 standard leads for all, and general indicators (erythrocytes, hemoglobin, leukocytes, platelets) were determined and biochemical (creatinine, uric acid, lipid profile) blood tests. Echocardiography was performed to determine the ejection fraction (EF), end-diastolic (CDR) and end-systolic (CSR) dimensions of the left ventricle, the thickness of the interventricular septum (TMJ) and the thickness of the posterior wall of the left ventricle (TSLJ), and the dimensions of the right ventricle (RV), left atrium (LP) and aorta were also measured. Based on the results of daily blood pressure monitoring, it was calculated the average values for systolic and diastolic blood pressure in the daytime and at night. The indicators of the general urine analysis were taken into account with the quantitative determination of the isolated protein.

The dynamics of the ST segment was also analyzed in all patients using daily Holter ECG monitoring. Statistical processing of the obtained data was carried out using the Excel 7.0 program using the software package (GraphPadInStat 3.0). The intergroup comparison was carried out using the Mann—Whitney method using the criterion Fischer. To identify the relationship between The Spearman linear correlation

analysis method was used for the indicators. The results are presented as M±SD, where M is the sample mean and SD is the sample standard deviation. The differences were considered significant at $p<0.05$.

## THE RESULTS AND THEIR DISCUSSION

The groups were comparable in age — (52.8±10.7) and (54.3±13.1) years, p=n.s., in duration of hypertension — (6.5±2.4) and (6.9±3.0) years, p=n.s., according to the mass index body weight — (33.8±2.8) and (33.7±1.7) kg/m2, p=n.s. All patients were on comparable antihypertensive and lipid-lowering therapy. Peripheral blood parameters did not differ significantly between the groups (Table 1).

**Table 1**

**Indicators of clinical blood analysis**

| indicator | AH (29 people) | AH+DM (31people) | *p* |
|---|---|---|---|
| Erythrocytes | 4.5±0.4 | 4.4±0.5 | n.s. |
| Leukocytes | 6.4±0.9 | 6.3±1.0 | n.s. |
| Platelets | 268.8±44.6 | 285.0±53.3 | 0.01 |
| Hemoglobin | 135.04±14.2 | 132.7±14.9 | n.s. |

In biochemical blood tests, we were interested in lipid metabolism indicators, as well as creatinine and uric acid levels. The values of the lipid spectrum, oddly enough, did not significantly differ between the patients of the two groups, except for the figures of total cholesterol, which was higher in patients with disorders in carbohydrate metabolism. Uric acid levels also did not differ between the groups. But the concentration of the indicator characterizing the filtration capacity of the kidneys was higher in people with diabetes mellitus, but within the reference values (Table 2).

The results of instrumental studies were based on data from echocardiography and daily blood pressure monitoring. All the average values for systolic and diastolic blood pressure in the daytime and at night were recorded at a significantly higher level in people suffering from combined pathology. Despite this, we did not find significant differences in indicators characterizing the size of the heart and the mass of the myocardium of the left ventricle between the groups after an ultrasound examination of the heart. The only difference between the patients was their global contractility myocardium, which was higher in individuals with hypertension.

**Table 2**

**Indicators of biochemical blood analysis**

| indicator | AH (29 people) | AH+DM (31people) | *p* |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Total cholesterol | 5.6±1.2 | 6.3±0.9 | 0.02 |
| HDL cholesterol | 1.59±0.6 | 1.51±0.58 | n.s. |
| LDL cholesterol | 2.37±1.0 | 2.7±0.9 | n.s. |
| Triglycerides | 2.7±1.2 | 2.3±1.2 | n.s. |
| Uric acid | 335.9±121.8 | 301.2±67.2 | N.s. |
| Creatinine | 73.1±23.4 | 103.6±31.3 | 0.0002 |

We did not find significant differences in the indicators of the general urinalysis. However, the amount of isolated protein was higher in the group of patients suffering from hypertension and diabetes than in those with elevated blood pressure — (0.066±0.024) g/l and (0.001±0.006) g/l, respectively (p=n.s.).

The factors responsible for the occurrence of complications from the cardiovascular system in patients with DM are hyperglycemia, dyslipidemia and hypertension. Adequate control of the above indicators significantly improves the prognosis of persons with diabetes suffering from impaired carbohydrate metabolism. The same factors need to be controlled for patients with essential hypertension or hypertensive disease, because over time, against the background of overweight, impaired lipid metabolism, they show signs of impaired carbohydrate tolerance, which then in 40% of patients are transformed into a detailed picture

Type II DM. It was revealed that the basis is a single pathogenetic mechanism — insensitivity of peripheral tissues (muscle, fat, endothelium) to the action of insulin (the so-called insulin resistance). In our study, an increase in the index was also detected in both groups body weight to obesity of the 1st degree, and a violation

of lipid metabolism, and an increase in blood pressure to the 1-2 degree. In addition, group 2 patients also had diabetes mellitus. Do not forget about such a fact asthe duration of hypertension. In our patients, it exceeded 5 years on average. Comparing this with scientific data, we can assume that in the near future some patients with hypertension may move to the group with diabetes due to the progression of insulin resistance. A negative point is the possible deterioration of kidney function in our patients in mind the presence of two triggering factors. The first is hyperglycemia, which has a damaging effect on the microcirculatory system, including the vessels of the glomeruli. The second factor is hyperlipidemia. Dyslipidemia has been found to have a nephrotoxic effect. Violation of lipid metabolism causes damage to the capillary endothelium, damage to the glomerular basement membrane, mesangium proliferation, which leads to glomerulosclerosis and, as a result, proteinuria. In combination with high blood pressure, the presence of two additional factors contributes to a faster

violation

kidney function and earlier development of renal insufficiency to varying degrees. In our study, 27% of patients with hypertension and DM and more than 4% of patients with hypertension alone had protein loss in urine, which is close to the data of other researchers: the prevalence of microalbuminuria in patients with hypertension without DM is less than 7%; prevalence of microalbuminuria in patients Type II diabetes and HYPERTENSION are about 30-40%.

Do not forget the fact that patients with DM have a number of features of the course of hypertension. Thus, according to the results of several studies, it was revealed that most patients belong to the category of "nondippers", i.e. they do not have a sufficient (physiological) decrease in blood pressure at night.

These disorders are caused by a violation of the activity of the autonomic nervous system, which has lost the ability to regulate vascular tone. But in our study, patients of both groups had a sufficient degree of blood pressure reduction at night.

Another feature is the high pulse pressure, which indicates an increase in the stiffness of medium- and large-caliber arteries and is a predictor of a poor prognosis. In the study, pulse pressure during daytime hours in the AH and DM group was 10% higher than in patients with AH. During the night hours, this difference reached 10 mmHg and 20%, respectively. And an increase in pulse pressure by 10 mmHg, in turn, is correlated with an increase in mortality due

to cardiovascular diseases by 20%. The average blood pressure values in the daytime and at night were 11-12% higher in people with hypertension and diabetes compared with patients without carbohydrate metabolism. Both hypertension and diabetes affect the occurrence and progression of coronary heart disease (CHD) as

individually and collectively. Our data indicate a high prevalence Coronary heart disease in people with hypertension and diabetes. Thus, 50% of patients had verified coronary artery disease and 8 (31%) patients registered changes according to Holter ECG monitoring that fall under the criteria of myocardial ischemia. While in the other group, the prevalence and changes in Holter were recorded in 8 and 4%, respectively.

## CONCLUSIONS:

Numerous studies have proven that active blood pressure reduction is a more important factor in reducing the incidence of cardiovascular complications and slowing the progression of kidney damage than intensive glucose control, and in combination with effective glucose control, treatment results are much better. Based on the results of our study, it can be concluded that it is necessary to more carefully and dynamically monitor lipid and carbohydrate metabolism, indicators of filtration activity of the body, blood pressure levels in order to prevent the occurrence of catastrophic consequences from the heart and kidneys in patients with diabetes mellitus. On the other hand, it is important to warn patients with high blood pressure against a possible violation of

carbohydrate metabolism by constant monitoring and correction of relevant factors.

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# STRESS TESTING IN PATIENTS WITH CORONARY HEART DISEASE

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## ABSTRACT

To assess the effect of coraxan on the parameters of the stress ECG test, 32 patients with coronary heart disease (stable angina pectoris of functional class I-III) were selected. A prerequisite for the patient's inclusion in the study was the presence of a stable sinus rhythm and the absence of significant regurgitation on the mitral valve according to the results of echocardiography. To assess the effect of coraxan on the functional state of the left ventricle (LV), 32 patients with coronary heart disease (stable angina pectoris of functional class I-III), aged 45 to 74 years, were selected. The diagnosis of angina pectoris of tension I-III FC was verified according to the treadmill test, according to the recommendations of the Canadian Association of Cardiology, clinical and anamnestic characteristics. Coraxan was added to all patients in addition to the standard treatment regimen for coronary heart disease. The study was conducted before treatment and after 12 weeks of coraxan treatment. Coraxan therapy in patients with coronary heart disease was accompanied by high antianginal efficacy and increased exercise tolerance. Thus, ivabradine therapy in patients with coronary heart disease was accompanied by both high antianginal efficacy and increased exercise tolerance.

**Key words:** coronary heart disease, coraxan, stress ECG test.

## INTRODUCTION

Coronary heart disease (CHD) continues to be the leader among the causes of morbidity and mortality in Europe, the USA and Russia, despite obvious achievements in the field of interventional cardiology and the emergence of new drugs. The prevalence of stable angina depends on age and gender: in men aged 45 to 54 years in 2-5% of cases, aged 65 to 74 years in 10-20% of cases, in women from 45 to 54 years in 0.5-1% of cases, from 65 to 74 years in 10-14% of cases. Stable angina pectoris is a chronic disabling disease characterized by the risk of developing acute coronary syndrome and high mortality. In the population, about 40-50 of all angina patients are aware of the presence of the disease and receive appropriate treatment, whereas in 50-60% of cases the disease remains unrecognized, despite the variety of diagnostic manipulations. The mortality rate of patients with stable angina is about 2% per year, 2-3% of patients have nonfatal myocardial infarction annually. Men suffering from angina pectoris live on average 8 years less compared to those who do not have this

pathology. According to the results of the Framingham study, in patients with stable angina pectoris, the risk of developing nonfatal myocardial infarction and death from coronary heart disease within 2 years is, respectively, 14.3% and 5.5% in men and 6.2% and 3.8% in women. The aim of the study was to study the effect of coraxan-based therapy in patients with coronary heart disease before and after 12 weeks of treatment on exercise tolerance.

## MATERIALS AND METHODS OF RESEARCH

To assess the effect of coraxan on the functional state of the left ventricle (LV), 32 patients with coronary heart disease (stable angina pectoris of functional class I-III), aged 45 to 74 years, were selected. The diagnosis of angina pectoris of tension I-III FC was verified according to the treadmill test, according to the recommendations of the Canadian Association of Cardiology, clinical and anamnestic characteristics. The stress ECG test was performed on the treadmill "Stress-Test ST-2001" (the Netherlands) using the modified Bruce protocol. When discussing the indications and contraindications for a stress ECG test, the recommendations of the American College of Cardiology and the American Heart Association (ACC/ANA), related to class 1, were guided. 2 days before the treadmill test, patients were canceled for 6-8 hours, prolonged-acting nitrates were canceled. The research was carried out in the morning. Indications for discontinuation of the test were considered: the occurrence of an angina attack, registration of ischemic signs in at least one ECG lead, achievement of submaximal heart rate, decrease in initial systolic blood pressure by more than 10 mmHg, increase in systolic blood pressure by more than 220 mmHg or diastolic blood pressure by more than 110 mmHg, registration on an ECG of life-threatening arrhythmias, according to the classification of J.Widdeg, 1984, modified by A.V. Inaccessible, 1999, the occurrence of syncope or other acute neurological symptoms. The electrocardiographic parameters of the treadmill test were determined: the total duration of the load (sec), the amount of external work performed (in MET), the degree of depression ST (mm), the time before the onset of depression ST (sec), the duration of depression ST (sec), the duration of the recovery period (sec), the presence of rhythm disturbances (extrasystole or paroxysm atrial fibrillation) during exercise or recovery period. The following hemodynamic parameters of the treadmill test were evaluated: maximum heart rate, maximum systolic and diastolic blood pressure. In addition, a "double product" was calculated at each load stage, as well as the ratio of the "double product" at the highest load stage to the "double product" at rest. The study included only patients with a positive stress ECG test on treadmill: - patients with a typical attack of angina pectoris during exercise; - patients with the appearance of horizontal or oblique depression or ST segment elevation with an amplitude of more than 1 mm, localized at a point 0.06 ms from the end of the ventricular complex, recorded in at least one standard lead, during or after the cessation of exercise.

## THE RESULTS AND THEIR DISCUSSION

Initially ischemic episodes of displacement of the ST segment from the isoline during exercise were detected in all patients. Before treatment, exercise tolerance was reduced in patients of the 2nd group, as evidenced by low values of the maximum achieved load level, the amount of external work performed, a significant duration of the recovery period, a pronounced increase in SAD and DAD during exercise. After treatment, favorable changes in exercise tolerance were observed in patients of group 2: an increase in the volume of exercise performed occurred by 41.8% (p=0.008), the maximum achieved load level increased from 2.2± 0.2 to 3.5± 0.2 by 59.4% (p=0.01). The total duration of the load was lengthened by 26.5% (p=0.02) due to an increase in the volume of work performed, and the duration of the recovery period was shortened by 36.6% (p=0.03). SAD and DAD after treatment decreased, respectively, by 6.8 mmHg and 7.0 mmHg, and the increase in these the indicators under load were less pronounced. The antianginal efficacy of coraxan was high: the degree of ST segment depression on the ECG decreased (p=0.04) from the initial level of 1.7±0.08 mm to 1.4±0.09 mm.

## CONCLUSIONS:

Thus, ivabradine therapy in patients with coronary heart disease was accompanied by both high antianginal efficacy and increased exercise tolerance.


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# CAUSES OF ARRHYTHMIA DURING PREGNANCY

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## ABSTRACT

38 patients (average age 27.1 ± 5.7 years) were examined in the II–III trimester of pregnancy. All patients were divided into three groups: group 1 included 18 women with cardiac arrhythmias and organic changes in the cardiovascular system, in the 2nd - 14 patients with idiopathic arrhythmias, in the 3rd (control group) – 6 practically healthy women with normal sinus rhythm. According to Holter electrocardiogram monitoring data, rhythm disturbances corresponding to Class III–IV according to the Laun–Wolf classification (1971) were recorded with the same frequency in both main groups for 24 hours. The maximum number of ventricular extrasystoles was registered in the 2nd group, supraventricular - in the 1st. Complex cardiac disorders rhythms occur in pregnant women both against the background of cardiovascular pathology and in the absence of organic changes, which requires careful dynamic monitoring of such patients.

**Key words:** heart rhythm disorders, arrhythmia, pregnancy.

## INTRODUCTION

Cardiac arrhythmias and conduction disorders during pregnancy remain one of the important problems both in terms of finding possible causes of their development, and in terms of treatment approaches and prognosis for mother and fetus. Unfortunately, there are no official statistics on the prevalence of these disorders during pregnancy. Scant literature data indicate that at the end of the last century, arrhythmia was registered in 5.0–15.7% of pregnant women. At the same time, in a retrospective analysis of 5,650 birth histories conducted by in the period from 2011 to 2014 in one of the major cities of Uzbekistan, it was revealed that cardiac arrhythmias and conduction disorders were recorded with a frequency of 31.7% and, in addition to conduction disorders along the legs of the Gis bundle, they were represented by sinustachycardia, infrequent supraventricular extrasystole (ISES) and ventricular extrasystole (VES) and extremely rarely paroxysmal tachycardia. The prognostic value of arrhythmias, in our opinion, is determined not so much by their possible connection with the organic pathology of the heart, as by those hemodynamic disorders that occur as a result of their development, they can lead to decompensation of cardiac activity and other complications in both the mother and fetus. There are no documented cases of maternal mortality from primary arrhythmias, although experts believe that

arrhythmias can lead to fatal outcomes. In a British confidential investigation into deaths from cardiovascular diseases, 9% of such cases were identified as the syndrome of “sudden cardiac death in adults". However, there are reports of deaths due to arrhythmia in patients without hemodynamic disorders and significant anatomical changes on the part of the cardiovascular system (CVS). Perhaps some patients of reproductive age can also be considered at risk, especially during pregnancy, since during this period pronounced hemodynamic, hormonal, vegetative and metabolic changes occur in the body. Researchers at the beginning of the last century described gender differences in electrophysiological processes in the myocardium. Thus, H.C. Bazett et al. It was noted that women have a heart rate (Heart rate) is higher than in men, and the duration of the QT interval on an electrocardiogram (ECG) is longer, even after heart rate correction. Other authors confirmed these data and pointed out that at rest, the QT interval in women is 10-20 ms longer than in men, and these differences become more pronounced during menstruation. In addition, women have a shorter duration and lower voltage of the QRS complex, as well as a shortening of the duration of the P wave and the PR interval. Also, non-specific changes are more common in women the repolarization process. At first glance, these differences can be explained by the initially smaller size of the heart in women, but they persist after correction of heart and body weight. The obtained data are associated with the effect of female sex hormones that affect the functioning of calcium and potassium channels. In particular, estrogens have been found to increase the duration of the QT interval by affecting the fast and slow current of sodium ions and the sodium-calcium exchanger. This observation has been confirmed in subsequent studies., in which participation in the regulation of the heart rhythm of the autonomic nervous system was noted. Gender characteristics relate not only to electrophysiological processes, but also to the nature of arrhythmias. In several epidemiological studies, it has been revealed that supraventricular tachycardia with narrow QRS complexes, arising by the mechanism of re-entry in the atrioventricular node, occurs in women in 2 times more often than in men. On the contrary, supraventricular tachycardia, which occurs by the mechanism of re-entry in the atrioventricular node with the involvement of an additional pathway, occurs 2 times more often in men. However, data on the nature and possible causes of arrhythmias during pregnancy are few, and any research in this direction remains very relevant, primarily for practical medicine.

## MATERIALS AND METHODS

38 pregnant women (average age 27.1 ± 5.7 years) in the II–III trimester of gestation were under observation. All patients, along with a routine examination, including a blood test for electrolytes (potassium, sodium) and thyroid hormones (triiodothyronine, thyroxine, thyroid-stimulating hormone), underwent echocardiography on an apparatus Logic-400 using M-, In-mode and Dopplerography,

Holter ECG monitoring for 24 hours on monitors Medilog Prima and Schiller MT-200. When analyzing ECG monitoring data by The following parameters were taken into account for Holter: the main driver of the rhythm, the average heart rate (day / night / day), the number of ISES and VES (for 1 hour and 1 day), as well as the class of VES according to the Laun–Wolf classification in the Ryan–Kenn modification.

Statistical processing of the results of the study was carried out using the Biostatistics software package, version 4.03, using standard methods of variation statistics and Student's criterion to assess differences in paired measurements of indicators. The differences were considered significant at $p < 0.05$.

## RESEARCH RESULTS AND THEIR DISCUSSION

Various cardiac arrhythmias 32 patients were registered, 6 women had a normal sinus rhythm. When analyzing anamnesis data It was revealed that 24 women (63.2%) had no bad habits, 14 patients (36.8%) smoked before pregnancy or continued to smoke at the time of examination, while the number of cigarettes per day ranged from 2 to 30, and the average pack-years ratio was 5.3 ± 1.8. Almost half of the patients had a burdened heredity for cardiovascular diseases, obesity and/or diabetes mellitus: arterial hypertension in one or both parents occurred in 55.6% of cases, myocardial infarction or cerebrovascular accident – in 8.2%, obesity – in 33.1%, diabetes mellitus – in 4.5%. Before the onset of a real pregnancy, no complaints were made about interruptions in the work of the heart, the woman's heartbeat. Approximately from the middle of the I–beginning of the II trimester of pregnancy, patients with arrhythmias began to be disturbed by a feeling of interruptions and “fading” in the work of the heart, palpitations, sometimes having a paroxysmal character, weakness, increased fatigue, which was the reason for his additional examination. As a result of the examination, more than half of the women with arrhythmias (18) revealed various changes in the cardiovascular system (Group 1), 14 patients with arrhythmias had no somatic pathology (Group 2) and 6pregnant women with sinus rhythm who made up the control group were practically healthy (group 3).

According to the clinical and instrumental examination, hypertrophic cardiomyopathy without obstruction of the outflow was diagnosed in group 1 left ventricular tract (n = 3), open oval window (n = 3), dilated cardiomyopathy without signs of heart failure (n = 4), mitral valve insufficiency of rheumatic genesis (n = 4), non-operated ventricular septal defect (n = 6), corrected tetrad of Fallot (n = 1) and post-myocarditis cardiosclerosis (n = 10). Mitral valve prolapse (MVP) was quite common (n = 30), including grade I mitral regurgitation was detected in 9 cases, grade II in 21. According to the results of Holter ECG monitoring in patients of this group, more often in total, extrasystole was detected, while the number of extrasystoles for 1 day ranged from 8 to 50 thousand.

Couplets were recorded in 6 patients (13-80 in 1 day), triplets in 4 patients (3-150

in 1 day), and ventricular tachycardia runs (1-5 in 1 day) occurred in 5 women with a heart rate from 156 to 229 in 1 min. These rhythm disturbances corresponded to class III–IV according to the Laun–Wolf classification. Interesting data were obtained by analyzing the monitoring results Holter ECG in patients with idiopathic arrhythmias who had no somatic pathology (group 2). In patients of this group, ISES were recorded with approximately the same frequency and significantly more often VES in comparison not only with the 3rd, but also with the 1st group. It is known that PMV, not being an organic pathology of the cardiovascular system, is often accompanied by various arrhythmias, which served as the basis for a more detailed analysis of the nature of arrhythmias in patients with PMV. As can be seen from the presented data, in the group of patients with PMV, as well as in the other two groups, there were both ISES, and VES. However, if ISES in patients with PMV were registered extremely rarely, then the average number of Their GES was comparable to the same indicator in the group of idiopathic heart rhythm disorders and was recorded significantly more often in comparison with patients who had other changes in the cardiovascular system.

Physiologically, pregnancy is accompanied by pronounced changes in central and peripheral hemodynamics, which increase with In the second trimester, they are manifested by an increase not only in the stroke volume (by 30-45% of its value before pregnancy), but also in the minute volume of the heart, reaching a maximum (33-50% of the initial level) at the 26-32 th week of pregnancy. During pregnancy, physiological tachycardia develops: heart rate by the end of pregnancy exceeds the heart rate before pregnancy by 15-20 in 1 minute. There is also a decrease in the total peripheral vascular resistance in by an average of 12-34%. These hemodynamic factors in patients with organic changes in the cardiovascular system can lead to cardiac arrhythmias, which was noted in this study.

The gestational period is characterized by a physiological increase in the activity of the renin-angiotensin-aldosterone system, which contributes to an increase in the volume of circulating blood, mainly due to an increase in plasma volume by about 40%. In addition, systemic vasodilation is an important factor in the adaptation of CVS to pregnancy, in the development of which not only plays a role increased secretion of nitric oxide and other vasodilating factors, but also an increase in the level of estrogens and progesterone, which contribute to an increase in the sensitivity of adrenoreceptors to hormones of the sympathetic-adrenal system. From the very beginning of pregnancy to childbirth, β-adrenoreactivity increases and decreases α-adrenoreactivity, which is a necessary condition for reducing the contractile activity of the myometrium in order to carry a fetus. Density beta-adrenergic receptors increase in myometrium under the action of progesterone. By itself, the activation of beta-adrenergic receptors It can contribute to the development of arrhythmia, as we found earlier.

Apparently, the so-called “idiopathic arrhythmias", according to researchers, are

largely due to the proarrhythmogenic effect of the sympathicoadrenal system, the functional activity of which increases under the influence of female sex hormones. An increase in ectopic activity in patients with MVP is also associated with autonomic dysfunction, which is traditionally perceived by cardiologists as an option, especially in the absence of hemodynamically significant mitral regurgitation It is normal and rarely requires therapy. It is known that in MVP there is a genetically determined defect in collagen synthesis, a decrease in the intracranial magnesium level, in conditions of deficiency of which fibroblasts produce defective collagen of the mitral valve flaps. Clinically, MVP is often manifested by disorders of the autonomic regulation of the heart rhythm, which are recorded with a frequency of more than 70%. During pregnancy, even in practically healthy women, activation of the sympathetic-adrenal system is noted, which in patients with MVP can lead to arrhythmias, and a large the number of high-grade HES in the same patients can have an effect on intracardiac hemodynamics and in the presence of additional risk factors (electrolyte imbalance, infectious process, stress, etc.) provoke stable ventricular tachyarrhythmias.

## CONCLUSION

Thus, the results of the study indicate that complex cardiac arrhythmias can occur in pregnant women both against the background of cardiovascular pathology, including congenital and acquired heart defects, post-myocarditis cardiosclerosis, MVP with minor mitral regurgitation, and in the absence of organic changes from internal organs and metabolic processes, which requires careful dynamic monitoring for such patients and in case of hemodynamic instability or with the development of life-threatening arrhythmias of timely adequate therapy.

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# BOSHLANG‘ICH SINFLARDA DIKTANT YORDAMIDA O‘QUVCHILAR YOZMA NUTQINI RIVOJLANTIRISH

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**Annotatsiya:** Mazkur maqolada boshlang‘ich sinflarda yozma nutq, eshitish,ko‘rish qobiliyatlarini rivojlantirishda eng samarali mashqlardan biri hisoblangan diktant va uning turlari haqida so‘z yuritiladi.

**Kalit so‘zlar:** ta’limiy diktant,yozma nutq,ta’kidiy diktant,yoddan yozuv diktanti, erkin diktant, izohli diktant, rasm diktant, lug‘at diktant, ijodiy diktant, saylanma diktant.

**Аннотация:** В данной статье рассказывается о диктанте и его видах, который считается одним из самых эффективных упражнений по развитию письменной речи, слуха и зрительных навыков в начальных классах.

**Ключевые слова:** учебный диктант, письменная речь, выразительный диктант, диктант наизусть, свободный диктант, объяснительный диктант, диктант-картинка, словарный диктант, творческий диктант, факультативный диктант.

**Abstract:** This article talks about dictation and its types, which is considered one of the most effective exercises in the development of written speech, hearing, and visual skills in primary grades.

**Key words:** educational dictation, written speech, emphatic dictation, memorized dictation, free dictation, explanatory dictation, picture dictation, dictionary dictation, creative dictation, elective dictation.

Ona tili ta’limi oldiga qo‘ygan maqsadi o‘quvchilarni shaxsiy fikrlashga, o‘zgalar fikrini anglashga va shu fikr mahsulini og‘zaki va yozma shaklda savodli bayon qila olishga o‘rgatishdan iborat. Boshlang‘ich sinf o‘quvchilarining yozma nutqini va savodxonligini oshirishda foydali mashqlardan biri diktantdir. O‘quvchida diktant yozishda paydo bo‘lgan malaka keyinchalik bayon , insho yozishga zamin yaratadi. Diktant uchun tanlanadigan so‘z , gap va matnlar soda, tushunarli bo‘lishi bilan birga ta’limiy ahamiyatga ega bo‘lib, bolaning qiziqishlarini oshirishga xizmat qililishi lozim. Diktant yozishda bola husnixat qoidalariga ham to‘la rioya qilishi kerak. Shuni alohida ta’kidlash joizki , o‘quvchi diktant yozishda so‘zning harfiy ifodasini ko‘rmay, eshitish orqali tovushlar majmuasini tasavvur etadi, tovushlarni harflar bilan almashlab yozadi.Diktantlar maqsadiga ko‘ra ikki turli bo‘ladi:Ta’limiy diktant. Diktantning bu turi o‘rganilgan mavzularni mustahkamlash maqsadida yozuv darsining biror qismida

o‘tkazilib, unga alohida soat ajratilmaydi. Ta’limiy diktantlar tashkil etish va bajarilish usuliga ta’kidiy diktant, o‘z diktant yoki yoddan yozuv diktant, izohli diktant, saylanma diktant, erkin diktant, rasm diktant, lug‘at diktant, ijodiy diktant kabi turlarga bo‘linadi. Bulardan saylanma erkin va ijodiy diktantlarda matn ma’lum o‘zgarishlar bilan yoziladi.Tekshiruv diktant. Diktantning bu turida yaqinda yoki ilgari o‘rganilib, mashqlar bilan mustahkamlangan qoidalarni o‘quvchilar qay darajada o‘zlashtirganliklari aniqlanadi. Tekshiruv diktanti bo‘lib o‘rganilgandan so‘ng yoki chorak oxirida o‘tkaziladi. Tekshiruv diktanti o‘quv yili davomida 5-6 marta o‘tkaziladi. Diktantning bu turida yo‘l qo‘yilgan xatolar chuqur tahlil qilinadi,ularni bartaraf qilish usullari belgilanadi. Shu jihatdan tekshiruv diktantining ta’limiy ahamiyati katta. Imloviy mashq sifatida diktantning xilma xil turlaridan foydalaniladi.Ta’kidiy diktant uchun tanlangan matnni yozdirishdan oldin o‘quvchilarga o‘rganilgan qoidalar eslatib, ayrim so‘zlarning yozilishi tushuntiriladi, sharoit talab qilsa, ayrim sozlarni grammatik tahlil qilib umuman yozish jarayonida nimalarga e’tibor berish kerakligi takidlanadi. Shuning uchun ham mazkur ish turi ta’kidiy diktant deyiladi. Ta’kidiy diktant uchun matnni “Diktantlar toplami” dangina emas, balki “Ona tili”, “O‘qish savodxonligi” darsliklaridan ham tanlash mumkin. Chunki ta’kidiy diktant o‘tkazishdan bir necha kun oldin o‘quvchilarga yozdiriladigan matnni o‘qib kelish topshiriladi. Bundan maqsad o‘quvchilarning organgan imlo qoidalarini mustahkamlash, undan amalda foydalanish ko‘nikmasini hosil qilishdir.O‘z diktant yoki yoddan yozuv boshlang‘ich sinflarning hammasida o‘tkaziladi. Bu diktant turini o‘quvchilar juda sevib, qiziqib bajaradilar. O‘z diktant uchun sinf o‘quvchilarning saviyasiga mos kichik bir parcha (yoki biror she’riy to‘rtlik) tanlanadi. Tanlangan matn doskaga yozib qo‘yiladi. Matnni avval o‘qituvchi o‘qib beradi. Matndagi bolar uchun tushunarsiz so‘zlarga izoh berib,imloga doir qoidalar takrorlanadi. Shundan so‘ng matn uch to‘rt bolaga o‘rgatilgach, yod olishlari uchun bir necha daqiqa vaqt beriladi. O‘quvchilar matnni yodlab olgach, doskadagi matn berkitiladi. Ular yodlaganlari asosida yozib bo‘lganlaridan so‘ng matn ochiladi. O‘quvchilar yozganlarini doskadagiga taqqoslab tekshiriladi va xatosini tuzatadilar. Diktant o‘tkazish usulidan ko‘rinib turibdiki, matn aytib yozdirilmaydi balki o‘quvchilar matnni yodlaydilar va mustaqil yozadilar. Shuning uchun ham u o‘z diktant yoki yoddan yozuv diktanti deyiladi.Izohli diktant o‘quvchilarning qobiliyatiga qarab ikki xil o‘tkaziladi. O‘quvchi odatda, o‘qtuvchining ko‘rsatmasi bilan ma’lum so‘zning yozilishini iktant yozishdan oldin yoki keyin izohlaydilar. So‘zning yozilishini bo‘g‘in-tovush,tovush-harf tomonidan tahlil qiladi, unga qoidani tadbiq etadi. Masalan,”Kitob - bilim manbai” - Kitob: Ki-tob.Ikki bo‘g‘in. Birinchi bo‘g‘inda k,i; ikkinchi bo‘g‘inda t, o, b, tovushlari bor. Oxirgi b tovushi p tovushi tarzida talaffuz qilinadi. Bu diktantda o‘quvchilar qoidalarga oid so‘zlarning tagiga chizadilar.Saylanma diktant o‘rganilgan grammatik va imlo qoidalarini

mustahkamlashga ularmi amalda qo‘llashda yordam berish bilan birga o‘quvchilar mavzuni qay darajada o‘zlashtirganliklarini aniqlashga ham imkon beradi. Diktantning bu turida o‘quvchi matnning yoki gaplarning hammasini yozmay o‘rganilgan qoidalar asosida yoziladiga so‘zlar yoki so‘z birikmalarinigina saylab yozadi, shuning uchun ham u saylanma diktant deyiladi.Ijodiy diktant o‘rganilgan qoidalarni o‘zlashtirish va yozuvda o‘rinli qo‘llash malakalarini mustahkamlash bilan birga, o‘quvchilar og‘zaki va yozma nutqining shakllanishida muhim o‘rin tutadi. Ijodiy diktantda o‘quvchilarga o‘rganilgan qoidaga mos so‘z, so‘z birikmalari, biror mavzuga oid savollar beriladi. Ular berilgan so‘z va so‘z birikmalarini qatnashtirib,savollarga javob toppish orqali matn yoki hikoyacha tuzadilar.O‘qtuvchi anashu berilgan so‘zlar yoki so‘z berikmalari yordamida tuziladigan hikoya mazmunini va ishini bajarish usuli haqida o‘quvchilarga tushuncha berishi kerak chunki ijodiy diktant matnini o‘quvchilarning o‘zlari ijod qiladilar va o‘qtuvchi ko‘rsatmasiga ko‘ra uni yozadilar.Shuning uchun bu diktant turi ijodiy inshoga o‘xshab ketadi.Erkin diktant ta’limiy diktantning bir turi bo‘lib, o‘quvchilar nutqini o‘stirishga , fikrlash qobiliyatlarini rivojlantirishga hizmat qiladi. Erkin diktant uchun hikoya tarzidagi uncha katta bo‘lmagan matn tanlanadi. Matnda o‘quvchilar yozishda qiynaladigan yoki imlosi o‘rganilmagan so‘zlar ishtirok etgan bo‘lsa matn mazmuniga putr yetkazmagan holda uni boshqa so‘zlar bn almashtirish yoki tushirib qoldirish mumkin. Diktantning bu turida o‘quvchilarga o‘qilgan bo‘limning mazmunini buzmagan holda, gaplarning shaklini o‘zgartirib yozish erkinligi beriladi.Masalan,”Quyosh chiqdi, hamma yoqqa nurini sochdi” gapining shaklini o‘zgartirib o‘quvchilar “Quyosh o‘z nurini sochdi”. “Quyosh nurini hamma yoqqa sochdi”kabi shakllarda yozishlari ham mumkin.Shuning uchun ham bunday diktant erkin diktant deyiladi.

**Xulosa** o‘rnida shuni aytishimiz mumkinki, o‘z kasbini sevgan harbir boshlang‘ich sinf o‘qituvchisi diktant va uning turlari haqida yetarlicha ma’lumotlarga ega bolishi, o‘z faoliyati davomida malakasini oshirishi va ish faoliyati davomida muntazam foydalangani ma’qul hisoblanadi.**Ijodiy diktantda** o‘quvchilarga o‘rganilgan qoidaga mos so‘z, so‘z birikmasi, biror mavzuga doir savollar beriladi. Ular berilgan so‘z va so‘z birikmalarini qatnashtirib, savollarga javob topish orqali matn yoki hikoyacha tuzadilar. O‘qituvchi ana shu berilgan so‘z va so‘z birikmalari yordamida tuzilgan hikoya mazmunini ishni bajarish usuli haqida o‘quvchilarga tushuncha beradi. Chunki ijodiy diktant matnini o‘quvchilarning o‘zlari ijod qiladilar va uni o‘qituvchining ko‘rsatmasiga muvofiq yozadilar. Shunisi bilan diktant inshoga o‘xshaydi. Ijodiy diktant organilgan qoidalarni o‘zlashtirish va yozuvda o‘rinli qo‘llash malakalarini mustahkamlaydi. O‘quvchilarning og‘zaki va yozma nutqiniog rivojlanishiga ijobiy ta’sir qiladi, ularda ijodkorlik, mustaqillik kabi zaruriy malakalarini shakllantirish muhim o‘rin tutadi. 4-sinfda kelishik qo‘shimchalari bilan otlarning turlanishini mustahkamlashda ijodiy diktantdan foydalanish mumkin:

To‘rtfasl 1. Qish, qahraton, ayoz, harorat, past, muz, shamol, izg‘irin. 2. Bahormayin, shabada, quyosh, maysa, sochdi, ko‘klam, dala, ish. 3. Yoz, kunlar, issiq, meva, sabzavot, poliz.Bayon o‘quvchilarning lug‘atini bo`yitish, bog‘lanishli nutqini o‘stirishga qaratilgan orfografik mashq turlaridan biri hisoblanadi. Bayon orfografik mavzularni o‘rganishning yakunlovchi bosqichida, o‘quvchilar qoidalarni bilib olib, uni tatbiq qilishga o‘rganganlaridan so‘ngo‘tkaziladi. Bayonyozganda o‘rganilgan imlo qoidalarini to‘g‘ri tatbiqetish ularning onglio‘zlashtirilganligini ko‘rsatadi.

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# BOSHLANG‘ICH SINFLARDA SIFAT SO‘Z TURKUMINI O‘RGATISH METODIKASI

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**Annotatsiya:** Ushbu maqolada boshlang‘ich sinf o‘quvchilarini ona tili darslarida sifat so‘z turkumini o‘rgatishda interfaol usullardan foydalanishning ahamiyati haqida so‘z boradi.

**Kalit so‘zlar:**sifat so‘z turkumi,so‘z turkumlarining gap tuzishda qo’llanilishi zamonaviy ta’lim, mustaqil fikr, ijodiy fikr, predmet belgisi,ta’limiy o‘yin,noan’anaviy dars.

**Аннотация:** В данной статье рассматривается важность использования интерактивных методов в преподавании качественной лексики на уроках родного языка учащимся начальной школы

**Ключевые слова:** прилагательное словосочетание, употребление словосочетаний в построении предложения, современное образование, самостоятельное мышление, творческое мышление, предметный признак, обучающая игра, нетрадиционный урок.

**Abstract:** This article discusses the importance of using interactive methods in teaching quality vocabulary in mother tongue classes to elementary school students

**Key words:** adjective phrase, use of phrases in sentence construction, modern education, independent thought, creative thought, subject sign, educational game, non-traditional lesson.

O‘zbekiston istiqlolga erishishi bilan bozor iqtisodiyotiga asoslangan demokratik huquqiy davlat va ochiq fuqarolik jamiyatini qurish yo‘lini tanlanganligi sababli,yangi ijtimoiy-iqtisodiy munosabatlar barcha sohalar qatorida ta’lim tizimi oldiga ham mazmun-mohiyati jihatidan butkul yangi vazifalarni qo‘ydi.Bu vazifalarning amalga oshirilishi ta’lim tizimining muntazam takomillashtrib borilishini va shu orqali yosh avlodni ilm-fan asoslari bilan chuqur qurollantirishni taqozo etadi.Zero,ilm olish yo‘lidagi izlanish insonning e’tiqodi va dunyoqarashni shakllantiradi,ma’naviy-axloqiy kamolot sari yetaklaydi.Ta’lim jarayonida ilg‘or pedagog o‘quvchilarini o‘rgangan bilimlarini hayot bilan bog‘lab olish ko‘nikmasini rivojlantiradi.O‘qituvchi o‘quvchilarning bilish faolyatini tashkik etadi, shundagina o‘quvchilar fanlarni tahlil qilish asosida mustaqil ravishda intelektual mashaqqatlarni hal qilish, xulosa chiqarish va umumlashtirish,qonunyatlarini shakllantirish,qo‘lga kiritilgan bilimlarni yangi vaziyatga tatbiq etishga intiladi. Darslarda interfaol usullardan samarali foydalanish

natijasida o‘quvchilarda bilimlarga mustaqil erishish qobilyati shakillanadi hamda mavzu bo‘yicha turli g‘oyalar topish,uni isbotlash orqali yangi aqliy harakat usullarini topish va bilimlarini bir muommodan boshqasiga ko‘chirish ko‘nikmasi hosil bo‘ladi.O‘quvchilarda diqqat va tasavvurlari rivojlanadi.O‘quv materiallarini idrok qilish orqali ularning bilim faolligi oshadi.

Sifatni o‘rganish tizimi materiallarni leksik va grammatik tomondan izchillik bilan boyitib,murakkablashtirib borishni ko‘zda tutadi.O‘quvchilar 1- va 2- sinfda ona tili va o‘qish savodxonligi darslarida sifatning leksik ma'nosini kuzatadilar,Sifatga qanday? Qanaqa? so‘rog‘ini berishga o‘rganadilar;3-sinfda sifat so‘z turkumi sifatida o‘rganiladi;4-sinfda ilgari o‘rganilganlar takrorlanib, grammatik materiallarga bog‘liq holda qip-qizil,yam-yashil kabi orttirma darajadagi sifatlarning yozilishi o‘rgatiladi.Ona tili va o‘qish darslarida o‘quvchilar nutqi yangi-yangi sifatlar bilan boyitiladi,ularga oldindan ma'lum bo‘lgan sifatlarning ma’nosiga aniqlik kiritiladi.Sifatni o‘rganish metodikasi uning lingvistik xususiyatlariga asoslanadi.Sifat shaxs yoki narsaning belgisi(rangi,hajmi,shakli va ko‘rinishi,maza-ta’mi,xarakter-xususiyati,hidi,vazni, o‘rin va paytga munosabati)ni bildiradi.Sifatning leksik-ma’nosini kuzatadilar uni ot bilan bog‘liq holda o‘rganishni talab qiladi.Sifatni tushunish uchun 1-sinfdanoq o‘quvchilar e’tibori sifatning otga bog‘lanishini aniqlashga qaratadilar.O‘quvchilar shaxs yoki narsaning belgisini aytadilar,ularda so‘roq yordamida gapda so‘zlarning bog‘lanishini aniqlash ko‘nikmasini o‘stiriladi,ya’ni ular gapdagi sifat va otdan tuzilgan so‘z birikmasini ajratadilar.Keyingi sinflarda bu bog‘liqlik aniqlashtiriladi.Shunday qilib,sifatning semantik-grammatik xususiyatlari sifat ustida ishlashni leksik va grammatik (morfologik-sintaktik) yo‘nalishda olib borishni talab etadi.“Sifat”tushunchasini shakllantirish o‘quvchilarning “shaxs yoki narsa belgisi” degan umumlashtirilgan kategoriyani o‘zlashtirish darajasiga bevosita bog‘liq.Shu maqsadda rang,maza, shakl, hajm, xil-xususiyatni bildiriladigan so‘zlar guruhlanadi va so‘zlarning xususiyatlari umumlashtiriladi.

“U kim? Bu kim?” ta’limiy o‘yini

Ta’limiy o‘yinni o‘tkazishdan maqsad: o‘quvchilarning mantiqiy fikrlash,tasavvur qilish ko‘nikmalarini shakllantirish,og‘zaki va yozma nutqini rivojlantirish.Ta’limiy o‘yinni o‘tkazish jarayoni: Stol ustiga bir qancha predmetlar terib qo‘yiladi.O‘qituvchi shu predmetlardan birortasini ta’riflaydi.Tariflash jarayonida,albatta,so‘z turkumiga oid bo‘lgan so‘zlardan foydalanadi.O‘quvchilar ta’rif asosida gap nima haqida borayotganligini topadilar.Masalan,U shar shaklida.Uni mashxur sportchilar ham,biz bolalar ham,kattalar ham sevib o‘ynaymiz.Shuningdek,u yosh bolalarning sevimli o‘yinchog‘idir.(javob:koptok)

Uning rangi oq.Uni “oq oltin”deyishadi.Kuzda yig‘ib olinadi.(javob:paxta)

O‘yinning afzallik tomoni shundaki,undan dars davomida o‘quvchilar diqqatini

jamlash,qo‘llarga dam berish maqsadida yoki tovushlar bilan tanishtirish,yangi mavzuni bayon qilish jarayonida foydalanish mumkin.O‘yin o‘quvchilarda ziyraklik,sinchkovlik sifatlarini va mustaqil fikrlash qobiliyatlarini shakllantirishga imkon beradi.Xulosa qilib aytganda,bugungi kunda o‘qituvchilar o‘quvchilarni har tomonlama barkamol shaxs qilib tarbiyalash uchun ta’lim jarayoniga zamonaviy yondosha olishi kerak.Boshlang‘ich sinflar ona tili darslariga ham noan’anaviy darslarni olib kirish va uni ta’lim mazmuniga singdirish,dars o‘tishning yangi-yangi usullarini topish Davlat ta’lim standartlari talablarini bajarishga zamin yaratadi.Inson shaxsini har tomonlama kamol toptirish,o‘sib kelayotgan yosh avlodda umum insoniy va milliy qadriyatlarga hurmat tuyg‘usini uyg‘otishda,milliy tilga,o‘z xalqining an’analariga iftixor hissini kamol toptirishda ona tili darsining o‘rni beqiyosdir.Shunday ekan,biz ham o‘z darslarimizni tashkil etishda aynan shu maqsadlarni ko‘zlagan holda ish olib boramiz. Barcha so‘z turkumlaridan farqli ravishda sifat so‘z turkumini o‘rganish tizimi materialni leksik va grammatik tomondan izchillik bilan boyitib, murakkablashtirib borishni ko‘zda tutadi. Boshlang‘ich sinf o‘quvchilarida so‘z turkumlari ustida ishlash jarayoni murakkab jarayon bo‘lganligi bois, u bosqichlarga bo‘ligan holda olib boriladi. Sifat so‘z turkumini o‘rganish jarayoni ham aynan shu shaklda, quyidagicha bo‘ladi:(DTS talablari bo‘yicha) 1. Boshlang‘ich sinf o‘quvchilari birinchi va ikkinchi sinflarda sifatning leksik ma’nosini kuzatadilar(ya’ni sifat so‘z turkumiga mansub bo‘lgan so‘zlarning qanday ma’no anglatayotganini tushunib oladilar, so‘roqlar bera oladilar); 2. Uchinchi sinfda sifat so‘z turkumi sifatida o‘rganiladi, ya’ni unga xos bo‘lgan grammatik xususiyatlar asta -sekinlik bilan ochib boriladi; 3. Boshlang‘ich sinflarning to‘rtinchi bosqichida esa shu so‘z turkumi doirasida o‘rganilgan ma’lumotlar takrorlanib olinadi. Sifat darajalariga xos bo‘lgan ba’zi imloga bog‘liq bo‘lgan qoidalar o‘rgatiladi. Ushbu jarayonda “sifat darajlari” atamasi ishlatilmaydi, darajalarga xos bo‘lgan xususiyatlar ochilmaydi, faqat orttirma darajaga xos bo‘lgan orfografik qoidalar( tovush ortishiga uchrab yoziladigan so‘zlar, masalan, yam-yashil, ko‘m-ko‘k) tushuntiriladi. Ko‘rsatib o‘tilgan so‘zlar chiziqcha bilan yozilish kerakligi haqida tushuncha beriladi. Boshlang‘ich sinflarda, umuman olganda qaysi bir bosqichda bo‘lmasin, sifat so‘z turkumini o‘rganish jarayoni ushbu so‘z turkumining lingvistik xususiyatlariga asoslanadi. Sifat so‘z turkumi predmetning belgisini bildiradi. Ushbu belgiga asoslanib, sifat quyidagi guruhlarga bo‘linadi: 1. Rang tusni bildiradigan sifatlar( rang-tus sifatlari); 2. Predmetning hajmini bildiradigan sifatlar(hajm, o‘lchov sifatlari); 3. Ma’za-ta’m sifatlari; 4. Xarakater-xususiyat sifatlar; 5. Hid sifatlari; 6. Vazn-o‘lchov sifatlari; 7. Zamon-makon sifatlari( bu sifatlar payt va o‘ringa qarab aniqlanadi). Sifat so‘z turkumini o‘rganish jarayonidagi birdan-bir talab uni ot so‘z turkumi bilan bog‘lab o‘rganishdir. Shu bois o‘quvchiga birinchi sinfdanoq butun e’tibor sifat so‘z turkumini otga bog‘lashga qaratilishi kerak. Ushbu usulning qulay

tomoni shundaki, bunda o‘quvchilar predmetning belgisini aytadilar va o‘quvchilarda so‘zlarni bir-biriga bog‘lash ko‘nikmasi o‘sib boradi. Ushbu usulga misol tariqasida “O‘rmonda ziyofat” she’rini o‘quvchiga tushuntirish jarayonini olishimiz mumkin1 . Bunda o’quvchilar she’rdagi sifatlarni aniqlashda ot so‘z turkumidagi so’zlar bilan bog‘lab aniqlaydilar. She’rdagi sifat so‘z turkumiga oid bo’lgan so‘zlar: hashamdor, achchiq, tirik, chirik, chag’ir kabi so’zlar. Ushbu jarayonda o‘qituvchi lug‘at ustida ham ish olib boradi. Chunki chag‘ir kabi o‘quvchiga notanish so‘zlar uchraydi. Aniqlik kiritadigan bo‘lsak, o‘quvchilar bu jarayonda ot so‘z turkumi va sifat so‘z turkumidan tarkib topgan so‘z birikmasi tuzishni o‘rganadilar. Ammo bu davrda “so‘z turkumi” atamasi ishlatilmaydi. Keying bosqichga o‘tgan sayin bu tushunchaga xos bo‘lgan xususiyatlar chuqurlashib, aniqlashib boradi. Sifat so‘z turkumining ikki ma’no va grammatik xususiyatlari ustida ishlash quyidagi ikki vositani talab qiladi: 1. Leksik(morfologik); 2. Grammatik(sintaktik). 3-sinfda sifat so‘z turkumini o‘rgatishda birikuvchanlikka doir quyidagi qo‘shimcha mashq turlaridan foydalanish mumkin: 1. Sifat turkumiga mansub sozning birikuvchanligi buzilgan misollar beriladigan mashqlar. 2. So‘z birikmasi yoki gap mazmuniga mos sifatlarni qo‘yish lozim bo‘lgan mashqlar. 3. Sifatni berilgan otlardan mazmunan mos keladigani bilan bog‘lab so‘z birikmasi tuzishga doir mashqlar. An’anaviy til o‘rganish jarayoni ko‘pincha takrorlash va eslab o‘rganishga qaratilgan. Ammo kichik yoshdagi maktab o‘quvchilari tajriba va jalb qilish orqali o‘rganishni xohlashadi. Ushbu qiziqarli va oson sifat so‘z turkumi bilan bog‘liq til o‘yinlari bilan qanday qilib o‘rganishni qiziqarli qilish mumkinligini quyidagi tavsiyalar orqali bilish mumkin. O‘quvchilarning kundalik hayot tarzlari bilan integratsiya qilgan holatda quyidagi savollar vositasida ularning ongida sifat so‘z turkumi haqida bilim, ko‘nikma va malakalarni shakllantirish mumkin. Masalan, o‘zingiz haiangizda qisqacha gapiring, fazilatlaringizni sanab o‘ting. Bu jarayonda xilxususiyat sifatlari shakllanadi. Bu jarayonda o‘quvchi sifat so‘z turkumi haqida bilim olish bilan birga sinfdagi do‘stlaring xarakter-xususiyatlarini ham bilib oladilar. Ikkinchi bir yo‘li sifatning mos kelishi nomi ostidagi interfaol metod sanaladi. Har bir kartada tur xil sifatlar yozilgan kartalar to‘plami yaratiladi. Shuningdek, pedagogga sifatlar bilan tavsiflanishi mumkin bo‘lgan ba’zi rasmlar (masalan, jurnallar rasmlar, sayohat risolalari va boshqalar)kerak bo‘ladi.

## XULOSA

O‘quvchilar matn yaratishga bosqichma-bosqich: so‘z ustida ishlash, gap va uning mantiqiy bog‘lanishi ustida ishlash, og‘zaki hikoya tuzish va uni yozma shakllantirish tarzida maxsus tayyorlab boriladi. Shunday qilib, muammoli o‘qitishning vazifasi o‘quvchilar tomonidan bilimlarni puxta o‘zlashtirish va aqliy hamda amaliy, mustaqil faoliyatlarini samarali bo‘lishiga hamkorlik qilish, ularda yangi vaziyatda olingan bilimlarni ijodiy qo‘llash malakasini shakllantirishdan iborat.

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# BOSHLANG'ICH SINF ONA TILI VA O'QISH SAVODXONLIGI DARSLARIDA CHET TILIDAN O'ZLASHGAN SO'ZLARNI YOZILISHINI O'RGANISH USULLARI

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**Annotatsiya:** Ushbu maqolada boshlang'ich sinf ona tili va o'qish savodxonligi darslarida chet tillaridan o'zlashgan so'zlarni qoidalarga mos ravishda yozishda pedagogik texnologiyalardan hamda interfaol metodlardan foydalanishning ijobiy ahamiyati ochib berilgan. Shuningdek, dars jarayonida qo'llash uchun turli zamonaviy pedagogik texnologiya usullaridan namunalar tavsiya etilgan.

**Kalit so'zlar:** boshlang'ich sinf, orfografiya, pedagogik texnologiyalar, zamonaviy, interaktiv, metod, didaktik maqsad, ta'lim samaradorligi, interfaol metod, interfaol dars

**Abstract:** This article reveals the positive value of using pedagogical technologies and interactive methods in writing words learned from foreign languages in accordance with the rules in the primary grade mother tongue and reading literacy classes. Also, samples of various modern pedagogical technology methods are recommended for use in the course of the lesson.

**Key words:** primary class, orthography, pedagogical technologies, modern, interactive, method, didactic goal, educational efficiency, interactive method, interactive lesson

O'zbek tilining leksik qatlami xilma-xil bo'lib, u o'zida turli so'z guruhlarini jamlaydi. Mazkur leksik qatlamda jamiyat taraqqiyoti, ijtimoiy hayotdagi yangilanishlar bilan bog'liq o'zgarishlar aks etadi va bu o'zgarishlar "leksikaning faqat miqdor jihatdan emas, balki sifat jihatdan rivojlanishini bildiradi. "Leksikadagi taraqqiyot, o'zgarishlar yangi lug'aviy birliklarning paydo bo'liSHi va ma'lum lug'aviy birliklarning yo'q bo'lishi (iste'moldan chiqishi), so'zlarning yangi ma'nolar kasb etishi va ayrim ma'nolarning yo'qolishi kabi hodisalardan iborat bo'lar ekan", "O'zbek tilining izohli lug'ati"da berilgan 80 000 so'z va so'z birikmasi ichida o'zining 10 dan ortiq ma'nosiga ega bo'lgan ko'p ma'noli so'zlar borligi, bundan tashqari, tilda umumxalq qo'llaydigan so'z va iboralar, turli sohalarga doir ko'plab atamalar mavjudligi hisobga olinsa, tilimizning leksikasi qay darajada boyligi ko'rinadi. Bu so'zlarsiz o'zbek tilida nutqiy faoliyatga kirishib bo'lmaydi. Ayonki, tilning asosiy lug'at zahirasidan turli muloqotlarda foydalana olishning asosiy sharti uni nutqqa kiritishdir. So'z va iboralarni rejali ravishda kichik yoshdagi bolalar nutqiga

kiritish maktabgacha va boshlang‘ich ta’lim bosqichidan boshlanadi.Ilm yo‘q joyda qoloqlik, jaholat va albatta, to‘g‘ri yo‘ldan adashish bo‘ladi. Sharq donishmandlari aytganidek, “Eng katta boylik - bu aql-zakovat va ilm, eng katta meros - bu yaxshi tarbiya, eng katta qashshoqlik - bu bilimsizlikdir”! Shu sababli hammamiz uchun zamonaviy bilimlarni o‘zlashtirish, chinakam ma’rifat va yuksak madaniyat egasi bo‘lish uzluksiz hayotiy ehtiyojga aylanishi kerak”.“O‘zbekiston Respublikasida umumiy o‘rta ta’lim to‘g‘risida”gi Nizomda ta’kidlanganidek: “Boshlang‘ich ta’lim o‘qish, yozish, sanash, o‘quv faoliyatining asosiy malaka va ko‘nikmalari, ijodiy fikrlash, o‘zini-o‘zi nazorat qilish uquvi, nutq va xulq-atvor madaniyati, shaxsiy gigiena va sog‘lom turmush tarzi asoslarining egallab olinishi ta’minlashga da’vat etilgan”. Shu asosga ko‘ra, boshlang‘ich sinflarda o‘quvchilarning umummadaniy va axloqiy ko‘nikmalari, datlabki savodxonlik malakalari shakllantirilishi lozim. Mamlakatimizda demokratik davlat va fuqarolik jamiyati qurish maqsad qilingan va bu amalga oshirilayotgan ekan, bu jarayonda yoshlarning o‘rni va roli alohida ahamiyatga ega. Zero, yoshlar bizning kelajagimiz, ajdodlardan meros qolgan muqaddas zaminni yuksaltirish, ilg‘or davlatlar darajasiga ko‘tarish ularning bilimi, iste’dodi, jasorati, ma’naviy barkamolligiga bog‘liq. Fan hamisha rivojlanish va tarqqiyotda. Bugungi kunda u misli ko‘rilmagan darajada jadal tus oldi. Agarda hozirgi dunyoga nazar tashlasak, bizni o‘rab turgan kurrai zamin zamonaviy texnologiyalar qurshovida ekanligiga guvoh bo‘lamiz. Boshqa tarafdan esa davlatlar o‘rtasidagi kuchli geopolitik siyosat ham globallashuv jarayoninig jiddiy tus olishiga sabab bo‘lmoqda. Ayni damda jamiyat taraqqiyoti, axborot texnologiyalarining rivojlanishi va davlatlararo siyosiy, iqtisodiy va madaniy aloqalarning kengayishi natijasida tillararo so‘zlarning biridan boshqasiga o‘tishi jadallashmoqda. Bu jarayon ham bevosita o‘zbek tiliga ta‘sir qilmoqda va o‘zbek tili leksikasi o‘zlashma so‘zlar - neologizmlar hisobiga boyishiga xizmat qilmoqda. Neologizmlar - yunoncha, neos- ”yangi”, logos -”so‘z” so‘zlarining jamlanmasi bo‘lib, jamiyat taraqqiyoti, hayotning talab-ehtiyoji bilan paydo bo‘lgan yangi narsa va tushunchalarni ifodalovchi so‘zlar. Neologizmlar avvaliga noodatiy so‘zdek bo‘ladi, lekin ko‘p qo‘llanilishi hisobiga - yangilik xususiyatini yo‘qotadi va faol so‘zlar qatoriga o‘tadi. O‘zbek tili leksikasi muntazam ravishda ichki va tashqi manbalar hisobiga boyib bormoqda. XIX-XX asrlarda jamiyat hayotida bo‘lgan o‘zgarishlar so‘zlarning o‘zlashish va iste‘moldan chiqish jarayonini tezlashtirdi. Bu davrda nafaqat ruscha, balki inglizcha, xitoycha, fransuzcha, ispancha so‘zlar rus tili orqali kirib keldi. Hozirda biz texnologiyalar asrida yashayotganimiz sababli hamda glaballashuv natijasida bizga bu so’zlar tez sur’atlarda kirib kelmoqda. Shuningdek, uni hamma hech qarshiliksiz qabul qilmoqda. Chunki ko’pchilik neologizmlarning biza muqobili yo’q. u asosan texnologiyaga oid so’zlar yoki qaysidir bir narsaning nomi ammo, u narsa bizda hali yaratilmagan shu sababli biz uni shu tilning o’zidagi variyantida aytishga majburmiz. Masalan: : koka-kola,

minimarket, gipermarket, chizburger, xotdog, netbuk, sensor, fleshxotira, planshet va h.k. Bu kabi neologizmlar turli sohalarda turlichadir.O‘zbek tili leksikasida inglizcha neologizmlar soni ortib bormoqda. Ingliz tilidan kirib kelgan o‘zlashma so‘zlarning barchasining muqobil variant yo‘qligi sababli hech qanday o‘zgarishsiz qo‘llaniladi. Ayrim o‘zlashma so‘zlar esa tilimizdagi izohli lug‘atlarga kiritilmagan. Ikki xil qo‘llanilayotgan neologizmlar imlo bo‘yicha ko‘pgina xatoliklarga sabab bo‘lishi mumkin. Shu sababli ularning faqatgina bitta ma‘noda qo‘llanilishini ta‘minlash lozim. Bilamizki, boshlang’ich sinflarning yangi darsliklarida chet tilidan o’zlashgan so’zlar ko’pchilikni tashkil qiladi. Chunki, darslikdagi mavzular zamonaviy hayotimizga bog’liq matn hikoyalardan tashkil topgan. Bu so’zlarni aytilishi ular uchun unchalik qiyinchilik tug’dirmasa ham , ularda to’g’ri yozishda biroz xato va kamchiliklarga yo’l qoyishadi. Chunki bu so’zlarning ko’pchiligi talaffuz qilingani kabi yozuvda aks etmaydi. Shuning uchun biz ularda to’g’ri yozuv malakalarini yangi pedagogik texnologiyalaridan foydalanib tashkil qilishimiz kerak. Dastlab bu tushunchani izohlaydigan bo’lsak: orfografiya grekcha «to‘gri» va «yozaman» so‘zlaridan olingan bo‘lib, adabiy tilning yozma shakli bilan bogliq. Orfografiya to‘gri yozish haqidagi qoidalar ko‘nikmasidir. Orfografiyani bilmay turib, fikrni adabiy til normalari asosida yozma ifodalab bo‘lmaydi. O‘quvchilarning orfografik savodxonligi haqida gamxo‘rlik qilish tilning aniqligi, fikrni to‘gri ifodalash, kishilar bilan o‘zaro xatosiz muomala qilish uchun gamxo‘rlik demakdir. Savod o‘rgatishda bolalarda grafik malakani shakllantirish bilan bir vaqtda imloga oid malakani shakllantirishga ham zamin yaratiladi. Orfografik malaka ongli nutq faoliyatining avtomatlashgan komponentidir. Faoliyat avtomatlashishi uchun uzoq vaqt davomida maqsadga qaratilgan mashklar bajarib boriladi. Orfografik mashqlar orfografik ziyraklik ko’nikmasini shakllantirishga, tegishli o‘rinda qoidani tadbik kilishga, mashqlarning qaysilari o‘rtasidagi borlanishni belgilash, ularni umumiy va yagona faoliyat sistemasiga kiritishga, o‘quvchilar uchun qoidaning mohiyatini aniqlash va uni shakllantirishga qaratiladi.Qoidani tatbiq qilish davridagina uning mazmuni chuqurroq o‘zlashtiriladi. Metodikada orfografik mashqlarga: 1) grammatik-orfografik tahlil; ko‘chirib yozuv: 3) diktantlar; 4) leksik-grammatik tahlil; 5) bayonlar kiradi. Grammatikorfografik va leksik-orfografik tahlilda orfografiyaning grammatika va leksika bilan bog‘lanishi, ko‘chirib yozuv va diktantda o‘quvchilar faoliyatini belgilaydigan omillar, xususan, ko‘chirib yozuvda ko‘ruv va qo‘l harakati uquvi, diktantda eshituv uquvi hisobga olinadi. Orfagrafik malaka murakkab malaka bo‘lib, uzoq davom etadigan mashqlar jarayonida yaratiladi va so‘zni fonetik tomondan tahlil qilish, uning morfemik tarkibini aniqlash ko‘nikmasi kabilarga asoslanadi To‘g‘ri yozuv malakasining shakllanishi uchun o‘quvchidan fikrlash faoliyati talab etiladi. Biror to‘g‘ri yozuv hodisasini o‘zlashtirish uchun o‘quv va yodda saqlashgina emas, balki analiz va sintez ham tadbiq etiladi. Bunda grammatik va orfografik hodisalarning

o‘xshash va farqli tomonlarini aniqlash uchun taqqoslash usulidan foydalanish hamda so‘z va so‘z shakllarini ma’lum grammatik yoki grafik guruhlarga ajratish, muayyan sistemaga solish, tushuntirish va isbotlash mashqlaridan foydalanish muhim rol o‘ynaydi. Demak, biz orfografiya qoidalarini qisman ma’lumotga ega bo’lgan bo’lsak endi biz endi neologizmlarda uchraydigan xatolarni to’g’irlashni yechimlarini interfaol metodlar yordamida ko’rib chiqamiz.Ona tili va o’qish darslarida interfaol metodlarning “Aqliy hujum”, “Klaster”, “Zigzag”, “Qora quti”, “Ortiqchasini top”, “Grafik tasvir” “Bir daqiqa”, “Qaynoq qartoshka” “Mosini top”, “To’g’risini toping” metodlaridan foydalanish darsning qiziqarli va jonli o’tishini ta’minlaydi. Ona tili darslarida ta’limiy o’yinlardan ham foydalanish yaxshi samara beradi. Shulardan “Mosini toping” interaktiv metodini misol sifatida olib qaraydigan bo’lsak. Ushbu metodni biz yozma ravishda jamoaviy ,hamda yakka tartibda zamonaviy texnologiyalardan foydalangan holda tashkil qilishimiz mumkin. Birinchisi, yozma ravishda uch guruhga ajratib metod shartini tushuntiramiz. Shart shundayki: qog’ozga jadval chizilgan va u uchta qatordan iborat. Buning ichida mavzuga oid chet tilidan kirib kelgan so’zlar yozilgan ammo, ulardan ikkitasi atayin aytilishi bo’yicha xato yozilgan, qolgan bitttasi esa to’g’ridir. O’quvchilar to’g’ri javobni doiraga olish bilan belgilashlari kerak va o’qituvchiga topshirishi kerak. Eng ko’p to’g’ri so’z yozolgan jamoa g’olib hisoblanadi. So’ng, u jamoa o’qituvchi tomonidan rag’batlantiriladi. Ikkinchisi, biz bu interaktiv metodni elektron doska yordamida maxsus dasturini tuzish orqali bajartirishimiz mumkin. Bizning dasturda ham uchta jadval qatori bo’ladi va unda o’quvchi javobni qo’li bilan yoki maxsus ruchka yordamida belgilaydi. U to’g’rib o’lsa qarsaklar ovozi yangraydi, aks holda o’ylab ko’ring belgisi ko’rinadi. Bu kabi so’zlar qatnashgan mashqlarni namuna sifatida 3-sinf (2- qism)ning ona tili va o’qish savodxonligi darsligining 11-betiga qaralsin. Bunday turdagi enterfaol darslar o’quvchilarning nafaqat darsga qiziqishini orttiradi, balki ularni darsga bo’lgan e’tiborini va diqqatini oshiradi. Bu esa dars sifat samaradorligini yanada yaxshilashga yordam beradi.Xulosa sifatida shuni aytish lozimki, darsda yangi pedagogik texnologiyalardan va interaktiv metodlardan foydalanish har qanday darsni qiziqarli va jonli qiladi. Har qanday o’quvchini qiziqarliligi bilan o’ziga jalb qiladi va yangi bilimni o’zi hohlagan tarzda yetkazishga yordam beradi.

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# TANA TILI VA UNING PSIXOLOGIYA BILAN BOG‘LIQLIGI

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**ANNOTATSIYA**

Ushbu maqolada tana tilini qanday tushunish mumkinligi batafsil yoritilgan. Shuningdek maqolada psixologik jihatdan tana tiliga qanday yondashish va insonlar harakati orqali ularga qanday munosabat va muloqotda bo‘lish keltirib o‘tilgan.

**Kalit so‘zlar:** tana tili, instuitsiya, hududiy makon, himoyaviy to‘siqlar, noverbal.

**ANNOTATION**

The article explains in detail how to understand body language. The article also mentions how to approach body language psychologically and how to relate to and communicate with people through their actions.

**Key words:** body language, intuition, torritorial space, protutive barriers, non-verbal.

Nutqiy muloqot turiga qarab axborot almashinish ikki turga bo‘linadi: verbal va noverbal. Verbal nutqda so‘zlar va ulardan gaplar tuzish orqali axborot almashiniladi.A.N Leontevning fikriga ko‘ra, har bir nutq akti “o‘ziga xos nutqning shakli va turi, aniq sharoitlar va muloqot maqsadlariga ko‘ra, turli nutq vositalarini qo‘llashni talab etuvchi psixologik muammoning yechimini topishdan iborat”. Xuddi shu holat nutqni tushunishga ham tegishlidir. XX asr oxiriga kelib sotsiolog olimlarning yangi turi-noverbolika sohasi bilan shug‘ullanuvchi mutaxassislar paydo bo‘ldi. Orintolog qushlar fe’l-atvorini kuzatib rohat qilganday, noverbolik mutaxassis ham odamlarning muloqot jarayonida noverbal signal va belgilarni kuzatganida rohatlanadi. Lekin noverbalik soha o‘tgan asrning 60-yillaridagina jiddiy o‘rganila boshlandi. Jamoatchilikka esa ularning mavjudligi 1970-yilda Yuliy Jast o‘z kitobini chop ettirgandan so‘ng ma’lum bo‘ldi.Bu kitob 1970-yilgacha bixevorist olimlar tomonidan olib borilgan tadqiqotlarni o‘z ichida umumlashtiradi. Ammo shunga qaramasdan bugun ko‘pchilik hali ham tana tili hayotda muhim ahamiyatga ega ekanligini bilishmaydi.Bixeviorizm(bixevioristlar). Psixologiyani inson va hayvonlarning xulq-atvori haqidagi fan sifatida talqin etilgan. Ularning ko‘pchiligi inson va hayvon psixikasiga xulq-atvor jihatdan yondashish zarurligini ta’kidlab o‘tishgan.Tana tili muammosini o‘rganishning texnik tomoniga kelsak, XX asr boshlariningeng ta’sirchan ishi sifatida Charlz Darvinning ifodalanishi asari bo‘ldi.Uning bu sohaga ochib bergan yo‘li ko‘pchilikning e’tiborini tortdi.

Albert Meyerabenning ta’kidlashicha, ma’lumotlarni yetkazish jaayonida verbal

vositalar (faqat so‘zlar) 7%, ovozli vositalar(ovozning joni, intonatsiya bilan birga ) 38 %, noverbal vositalar 55 % ishtirok etar ekan.Intuitsiya tushunchasi. Inson sezgirlikka va ichki his-tuyg‘usiga ega deganimizda, uning boshqa inson tomonidan yuborilgan neverbal signallarni o‘qib olishi va bu signallarni verbal signal bilan solishtira olish qobiliyati nazarda tutamiz. Boshqacha qilib aytsak, bizda oldindan sezish bor yoki “oltinchi sezgi” bor deya olamiz. Bu sezgi kimdir yolg‘on gapirayotganini oldindan bilish imkonini beradi. Bu xususiyat erkaklarga nisbatan ayollarda ko‘proq rivojlangan. Ayollarda intuitsiya kuchli bo‘lganligi sababli kamdan-kam erkaklar o‘z ayollarini alday olishadi.Ayollar ko‘proq erkaklar ko‘zlariga qaraydilar buni ko‘pincha buni sezishmaydi.Tana tili va ko‘zlar.Ko‘z inson qalbining sorlarini ifodalaydi.U ko‘zlar tili deb ataladigan boshqa til bo‘lgan tana tilidan olingan bo‘lib, u odamlar tomonidan eng keng tarqalgan va qo‘llaniladigan boshqa bir muloqot usulini o‘rnatish uchun debocha.Ko‘pgina mutaxassislarning ta’kidlashicha, odamlarning muloqoti, asosan, so‘zlar, harflar va harakatlarsiz vizual aloqaga asoslangan.Vizual aloqaning ko‘p qismi ko‘zlar orqali bo‘ladi.Ko‘z qorachig‘ining kengayishi va uning yorqinligi hayrat va muhabbatdan dalolat beradi.Ammo buning aksi bo‘lsa, bu boshqasiga befarqlik va ishonchsizlikni anglatadi.Ko‘zni o‘ngga siljitish, narsalarni o‘ylash va tortishni ko‘rsatadi.Ko‘zlar chapga harakatga kelsa, bu hissiy jihatlar va psixologik to‘qnashuvlarning dalilidir.Ko‘zni joyiga mahkamlash kuchli e’tiborni ifodalaydi.Hudud maydonining ijtimoiy darajasi o‘rtacha ta’minlangan odamdan u Shimoliy Amerikada, Angliyada yoki Avstraliyada yashashidan qat’i nazar deyarli bir xildir.Uni 4 ta aniq makoniy ( fazoviy) hududlarga bo‘lish mumkin:

1. Intim hudud (15dan – 46sm gacha). Bu hududni inson o‘z shaxsiy mulkiday qo‘riqlaydi va bu hududga kirishiga faqat yaqin insonlar bolalari, ota-onalari, turmush o‘rtoqlari, yaqin emotsional muloqotda bo‘luvchi shaxslargagina ruxsat etiladi.

2. Shaxsiy hudud (46sm dan - 1.2 metrgacha). Bu bizni turli kecha va bazmlarda bizni boshqalardan ajratib turuvchi hudud.

3. Ijtimoiy hudud (1.2 metrdan - 3.6 metrgacha). Biz begona odamlardan, masalan, turli kommunal to‘lovlarni yig‘uvchi xodimlardan o‘zimizni yiroq tutamiz.

4. Jamoatga oid hudud (3.6 metr dan ortiq). Biz odamlarning katta guruhiga murojaat qilganimizda aynan shu auditoriyada bo‘lishimiz maqsadga muvofiq.

Qandaydir to‘siq ortida yashirinish insonning tabiiy ravishda o‘z-o‘zini saqlash reaksiyasi bo‘lib, u buni ilk bolalik davrida o‘zlashtirgan. Biz bolaligimizda stol, stullar yoki xavfli vaziyatga tushishimiz bilanoq onamiz ortiga yashirinamiz. Tana tilida aynan shunday qo‘l va oyoq harakatlari mavjudki, ular insonning qay jihatdan himoyalanganligini bildiradi. Qo‘llar orqali harakatda shunday misol keltirish mumkinki, ro‘parama-ro‘para siz bilan suhbatdosh bo‘layotgan inson ko‘kragida qo‘llarni chalishtirganda, u sizning fikringizga qo‘shilsada, ammo ich-ichida norozi ekanligini bildiradi. Insonlar noverbal muloqotda alday olmaydi, verbal muloqotda

esa buning imkoni bor. Yana bitta misol sifatida qo‘llarni yelkada chalishtirishlari mumkin. Ular gapida qat’i turuvchi inson pozitsiyasini egallashadi. Yuristlar orasida oqlovchi va prokurorlar ko‘pincha ko‘kraklarida qo‘llarini chalishtirishadi. Ammo prokurorlar qo‘llarining kaftlarini musht qilgan holatda, oqlovchilarning qo‘li esa yelkalarini ushlagan holtda bo‘ladi va bu ular bir-biriga qarshi ekanligi ko‘rsatadi.Oyoqlarda ham himoyada qo‘llaniladi. Bunda oyoqni oyoqqa tashlash usuli raqobat va qarama-qarshilik ruhi mavjudligidan darak beradi. Bunday o‘tirish jangovor xarakterli erkaklarga xos. Oyoqni oyoq ustiga qo‘yib, qo‘llar bilan ushlab o‘tirish. Bu holat qattiq va o‘jar odamning belgisidir.Xulosa qilib aytganimizda insonlar bilan muloqot mobaynida aynan tana tilini bilish eng muhim ahamiyat kasb etadi.Ular ya’ni insonlar qanday ruhiy holatda ekanligini tashqariga chiqarmasligi mumkin, ammo biz insonlarning qanday holatni egallashiga qarab ular nima demoqchi ekanligini bilamiz va bu orqali muloqot va munosabatlarni bevosita yaxshilash imkoni bizda tug‘iladi.

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# FIZIKA DARSLARIDA EKOLOGIK MAZMUNDAGI MASALALAR

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**Annotatsiya**. Buguni kunda vujudga kelgan ekologik muammolar, texnagen ofatlar, atrof muhit ifloslanishi va iqlim o'zgarishi kabi vujudga kelgan muammolar eng dolzarb hisoblanadi. Bu muammolarni hal qilishda umum o'rta ta'lim maktablari o'quvchilariga fizika darslarida ekologik mazmundagi masalalarni yechish muhim rol o'ynaydi.

**Kalit so'zlar:** fizika, ekologiya, ekologik mazmun, tabiat, iqlim, ekologik ta'lim, ekologik tarbiya, atrof muhit, biosfera, fizik tadqiqot.

**Аннотация.** Сегодня экологические проблемы, техногенные катастрофы, загрязнение окружающей среды и изменение климата являются самими актуальными. Важную роль в решении этих задач играет решение экологических задач на уроках физики для учащихся общеобразовательных школ.

**Ключевые слова:** физика, экология, экологическое содержание, природа, климат, экологическое образование, экологическое воспитание, окружающая среда, биосфера, физические исследования.

Inson va tabiatning bugungi kundagi keng ko'lamdagi o'zaro ta'siri na faqat maktab va oliy ta'lim o'quvchi, talabalarining, balki keng ommani ekologik tarbiyalash muammosini dolzarblashtiradi. Maktab fizika kursining mazmuni o'quvchilarning tabiat bilan o'zaro munosabatda bo'lish, bilim va ko'nikmalarini shakllantirish, hayoti va salomatligi uchun ekologik xavfsizlikni taъminlash uchun sharoit yaratishga qaratilgan. Oxirgi yillarda vujudga kelgan ekologik muammolar, texnogen ofatlar, atrof muhit ifloslanishi va iqlim o'zgarishi kabi vujudga kelgan muammolar bugungi kunning eng dolzarb masalalari hisoblanadi. Bu muammolarni hal qilishda umum o'rta ta'lim maktablari o'quvchilariga fizika darslarida ekologik mazmundagi masalalarni yechish muhim rol o'ynaydi [1-3].

Mavzularni o'rganish jarayonida va o'quvchilarning ekologik ongini, ekologiya elementlarini shakllantirish uchun fizika darslarida o'quvchilarga ekologik mazmundagi vazifalarni taklif qilish kerak. Ekologik mazmunga ega bo'lgan masalalar o'quvchilarda katta qiziqish uyg'otadi. Darslarda keng qiziqish uyg'otadigan va ekologik tarbiyaga ko'maklashadigan bir nechta misollar keltiramiz[4.5].

1.O'rganilayotgan xududga taaluqli bo'lgan ekologik holatni mos ravishda 150 va 300 yildan keyingi parchalanish tezligi munosobatini aniqlang. Yarim emirilish davri 150 yilga teng.

Shartlar: $m_0 = 2000$; $T = T_1 = 150$ yil; $T_2 = 300$ yil.

$\frac{v_1}{v_2}$

Biz quyidagi formuladan foydalanib hisob-kitoblarni qilamiz:

$$v = \frac{m_0}{T} \times \left(\frac{1}{2}\right)^{\frac{T_1}{T}} \times \sqrt{2}$$

.

Natijani olganimizdan keyin, quyidagicha xulosa qilishimiz mumkin: har 150 yilda emirilish darajasi 2 barobar ortadi. Tezlikning oshishi modda massasining kamayishiga, chiqindilarning atrof-muhitga va inson salomatligiga salbiy ta'sir qilish muddati kamayishiga olib keladi.

Bugungi kunda dunyo miqiyosida chiqindilarni saqlash, utilizatsiya qilish, qayta ishlash va undan keyingi foydalanish texnalogiyasi yaratilmagan, ishlab chiqilmagan. Shuning uchun, o'quvchi yoshlarning bu muammo bilan tanishishi chiqindilarni saqlash texnologiyalarini yaratish muammosi haqida o'ylashga majbur qiladi. O'ylaymizki, kelajakda sizlardan ba'zilaringiz bu muammoga yechim topasiz. Bu kelajakning vazifasi. Qog'ozni tashlayotganda, parchalanish uchun ikki yildan o'n yilgacha, plastik paketlarga esa ikki yuz yildan ortiq vaqt ketishini unutmang. Shisha ming yildan keyin parchalanadi. Bularni eslab qolsangiz ko'chaga shisha butilka yoki plastik xaltacha tashlashdan oldin bularni eslab qolishingiz va o'ylab ko'rishingiz kerak.

2. Taksi mashinasi kuniga 20 kg benzin sarflab, shaharda atrof-muhitni ifloslantiruvchi qancha kub metr gazni chiqaradi? 0 ° S haroratda gaz zichligi 0,002 kg / m3 ni tashkil qiladi

3. Qopqog'i germetik bo'lmagan rezervuardan bir yilda 2,5 tonna neft mahsulotlari bug'lanishi mumkin. Maksimal ruxsat etilgan 100 mg/m3 konsentratsiyada benzin bug'lari bilan qanday hajmdagi havo zaharlanadi?

4. AESning butun birlamchi konturi $5\text{-}10^5$ Pa bosimga bardosh bera oladigan qirrasi 40 m bo'lgan kubga ekvivalent hajmda joylashgan. Avariya holati sodir bo'lgan taqdirda, qachonki, konturdagi suvning barchasi harorati taxminan 2000 ° C bo'lgan bug'ga aylanganda, radioaktiv bug'ning atrof- muhitga chiqishini oldini olish kerak. Himoya bardosh berishi uchun birlamchi konturda bo'lishi mumkin bo'lgan maksimal suv massasini hisoblang?

5. Kit quvvati 360 kVt bo'lgan dumining kuchli harakati bilan tanasini okean qa'riga yo'naltirib, 36 km / soat tezlikda 1000 m chuqurlikka erishadi. Bu erda qanday ish bajariladi? Nega kit suvda cho'kmaydi?

6. Fillar haqida nimalarni bilasiz? Massasi 4,5 tonna bo'lgan 40 km/soat tezlikda yuguruvchi Afrika fili qanday energiyaga ega?

7. Olovda 10 ° C haroratda 3 litr suv qaynatish uchun qancha miqdordagi o'tin yoqish kerak, agar o'tinning yonish paytida ajralib chiqadigan energiyaning 15% suvni

isitish uchun sarflansa?

8. Inson tanasi uchun eng qulay bo'lgan namlik 50-70% va 20 ° C haroratda 4 × 3 × 2,5 m o'lchamdagi xonada qancha suv bug'i mavjud?

9. Quvvati 100 ot kuchiga ega bo'lgan dvigatelning foydali ish koeffitsienti 20% bo'lsa, qancha litr benzin befoyda yonganini aniqlang. 100 km ga benzin iste'moli 8 litrni tashkil qiladi?

Fizika tabiiy fanlar orasida etakchi o'rinni egallaydi: ularning barchasi fizik terminologiyalar, fizik asboblar va fizik tadqiqot usullaridan foydalanadi. Fizika fanini o'qitishda talabalarni tabiatni o'rganish va muhofaza qilishning zamonaviy usullari bilan tanishtirish imkoniyatlari mavjud, boshqa darslarda olingan bilimlarni umumlashtirish mumkin. Tabiat hodisa va jarayonlariga ilmiy yondashish, ilmiy tajriba o'tkazish ko'nikma va malakalarini shakllantirish maktab fizika kursining eng muhim vazifalaridan biridir. Bu maktab o'quvchilarida mavjud bo'lgan fizikaviy va ekologik muammolarni o'rganish va hal qilish uchun muhim bo'lgan ko'nikmalarni rivojlantirishga imkon beradi.

Misollar:

• Nima uchun zavod trubalari imkon qadar baland qilib qurilgan?

•Nima uchun neft suv yuzasida yupqa qatlamda tarqaladi? Neft plyonkasi hovuzning biosferasiga qanday ta'sir qiladi?

• Nega atom va issiqlik elektr stantsiyalarini aholi punktlariga yaqin joyda joylashtirish mumkin emas?

• Strelkalari nur tarqatuvchi qo'l soatlarini doimo taqib yurish mumkinmi?

• Yer yuzida ichimlik suvi ko'p joylarda tanqis. Uni dengiz suvidan bug'lanish yoki muzlash orqali olish kerak. Qaysi yo'l foydaliroq?

• Nima uchun mevali daraxtlarni oqlash kerak?

**Foydalanilgan adabiyotlar:**

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# FIZIKA DARSLARIDA EKOLOGIK MAZMUNDAGI MASALALARNI YECHISH

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**Annotatsiya.** Umum o'rta ta'lim maktablaridagi ekologik ta'lim o'quvchining atrof-muhitga mas'uliyatli munosabati bo'lishligi uchun asos bo'lib xizmat qiladi. Ushbu ishda ekologiya asoslarini o'rganish fizika kursiga oid masalalarni yechish orqali ko'rsatib berilgan.

**Kalit so'zlar**: fizika, ekologiya, ekologik mazmun, tabiat, ekologik inqiroz, ekologik ta'lim, ekologik tarbiya, atrof muhit, biosfera, ekologik muammo.

**Аннотация.** Экологическое образование в общеобразовательной школе служит основой ответственного отношения учащегося к окружающей среде. В данной работе показано изучение основ экологии путем решения задач, связанных с курсом физики.

**Ключевые слова:** физика, экология, экологическое содержание, природа, экологический кризис, экологическое образование, экологическое воспитание, окружающая среда, биосфера, экологическая проблема.

**Abstract.** Environmental education in secondary schools serves as the basis for a student's responsible attitude towards the environment. This work shows the study of the fundamentals of ecology by solving problems related to the physics course.

**Key words:** physics, ecology, environmental content, nature, environmental crisis, environmental education, environmental education, environment, biosphere, environmental problem.

Insonning atrof-muhitga bo'lgan ta'siri, aralashuvi bugungi kunda shu darajaga yettiki, ushbu sharoitlarda, tabiatning tabiiy mexanizmlari ko'pincha inson ishlab chiqarish faoliyatining nomaqbul va zararli oqibatlarini bartaraf yeta olmasdan qoldi [1,2]. Shuning uchun fizika darslarida o'rganiladigan tabiat qonunlari, hodisalari va ob'ektlari, fan-texnika taraqqiyotining asosiy yo'nalishlari ekologik muammolar bilan bog'liq holda ko'rib chiqilsa o'quvchilarni atrof olamda sodir bo'layotgan voqealarga befarq bo'lmaslikka chaqiradi.

Shuning uchun o'quvchilar nafaqat ekologik mazmunga ega bo'lgan har xil turdagi fizik masalalalarni yechish usullarini, balki har qanday kognitiv va ijodiy masalalarni hal qilishda qo'llanilishi mumkin bo'lgan umumlashtirilgan usullarni ham o'zlashtirishlari muhimdir. Ekologik mazmunga ega bo'lgan masalalar o'quvchilarda katta qiziqish uyg'otadi. Bu yerda yuqori sifatga ega bo'lgan masalalarni tanlash qiziqarli bo'lib, ularni hal qilishda o'quvchilar boshqa fanlar bo'yicha bilimlaridan va

o’z hayotiy tajribalaridan foydalanadilar.

Ekologik mazmundagi masalalarni yechish o’quvchilarda nazariyani yekologiya bilan bog’lash qobiliyatini rivojlantirishga yordam beradi, fizikaviy masalalarni chuqurroq va musthkam tushunishga yordam beradi va mantiqiy fikrlashlarini rivojlantiradi.[3,4] Maktab fizika kursida fizika va ekologiyaga oid bo’lgan bir nechta masalalar bilan tanishtirishib chiqamiz.

**Tabiatdagi kuchlar**. Butun dunyo olimlari insoniyatning tabiatdan foydalanishda oqilona yondashishiga yordam berish yo’llarini izlamoqda. Qalinligi 20 sm gacha bo’lgan tuproqning yuqori unumdor qatlamini hosil qilish uchun 2-7 ming yil vaqt sarflandi va harbiy to’qnashuvlar oqibatida, jumladan, son-sanoqsiz urushlar natijasida insonning o’ylamasdan boshqaruvi unumdor tuproq qatlamining deformatsiyasiga olib kelishi mumkin. Yeroziya jarayoni bu qatlamni 20-30 yil ichida butunlay yo’q qilishi mumkin.

K -700 mashinasining og’irligi 314000 N, yo’l bilan aloqada bo’lgan mashina g’ildiraklarining uzunligi 3,5 m, kengligi 50 sm, mashinaning yerga beradigan bosimini hisoblang.

$P = \frac{F}{s} = \frac{314000}{2 \cdot 3{,}5 \cdot 0{,}5} = \frac{314000}{3{,}5} = 89,7$ kPa.

Javob. 89,7 kPa.

Savol. Har bir tirtilining uzunligi (2,9 m), tirtillari kengaytirilganda (0,92 m) K-700 traktoriga (13945 kg) yuqori darajadagi yurish qobiliyati ta’minlanadimi? Botqoqlangan tuproqda maksimal bosim 200 kPa dan oshmasligi kerak.

m=13945 kg

a=0.92m

b=2.9 m $\quad P = \frac{F}{S} = \frac{13945 \cdot 9.8}{2 \cdot 2.9 \cdot 0.92} \approx 25$ kPa

$P_n$=200 kPa

P-?

Javob. Bardosh beradi, chunki traktor bosimi 200 kPa dan kam.

**Shovqinning atrof-muhitga ta’siri.** Tabiatdagi barcha tirik mavjudotlar odatda tinchlikda yoki ohangdor yoqimli tovush va melodiyalar ishtirokida o’zlarini yoqimli his qiladilar. Qushlar va hayvonlar haddan tashqari shovqin suronli bo’lgan joylarda yashay olmaydilar. Shovqin -suron, baqir –chaqir va chiyillashlar nafaqat yeshitish qobiliyatiga, balki asab va yurak-qon tomir tizimlarining holatiga ham zararli ta’sir ko’rsatadi, gipertonik asab va boshqa og’ir kasalliklarni keltirib chiqaradi.

Yuk mashinasidan kelgan tovush 2 $N/m^2$, samolyotdan kelgan tovush esa -100 $N/m^2$ bosim hosil qiladi. Odamning quloq pardasi 5000 $N/m^2$ tovush bosimida yorilishi, 100000 $N/m^2$ bosim esa o’pkaga zarar yetqazishi mumkin. 50-100 $N/m^2$ bosim ta’sirining zarari binolarga kichik zarar yetkazadi.

8 Gts chastotali infratovushlar inson salomatligi uchun zararli hisoblanadi.

1. Ovozning havodagi tezligi 340 m/s bo'lganda, ushbu infratovushning havodagi to'lqin uzunligini aniqlang.

Sharti:

$\nu = 8$ Gts

$V = 340$ m/s $\quad \Lambda = V/\nu = 340/8 = 42{,}5$ m

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$\Lambda$ -?

To'lqin uzunligi– 42,5 m ga teng.

2. Yo'l chetida bo'lgan inson tomonidan qabul qilinadigan yengil avtomobildan tarvalayotgan tovush intensivligi 0,01 Vt/m$^2$ ni tashkil qiladi. Ovoz tezligi 330 m/s, muhitning zichligi 1,3 kg/m$^3$ bo'lsa, tovush bosimi va tovush darajasini aniqlang. Bu tovush darajasi odamga qanday ta'sir qiladi?.

Sharti:

$J = 0.01$Vt/m$^2$ $\quad J = P^2/(\rho \cdot c) \quad P = \sqrt{(J \cdot \rho \cdot c)}$

$\rho = 1{,}3$kg/m$^3$ $\quad P = \sqrt{(0.01 \cdot 1.3 \cdot 330)} \approx 2$ n/m$^2$

$v = 330$ m/s

P-?

Bu 100 dB ga to'g'ri keladi va y'oq'imsiz his –tuyg'ularni keltirib chiq'aradi.

**Issiqlik hodisalari.** Avtomobillar atrof-muhitga salbiy ta'sir ko'rsatadi. Ulardan foydalanish atmosferaga 200 dan ortiq kimyoviy birikmalarning chiqishi bilan kuzatilib, ularning aksariyati zaharli hisoblanadi.

Chiqarilgan gazlar shahar yekologiyasining yomonlashishiga olib keladi va inson salomatligiga salbiy ta'sir qiladi (intellektni pasaytiradi, xotirani buzadi va hokazo). Bugungi kunda Toshkent shahri chiqindi gazlardan zaharlanayotgan dunyodagi eng notoza shaharlardan hisoblanadi.

1. 300 kVt quvvatga yega samolyot motorining foydali ish koeffitsenti (FIK) 30% ni tashkil qiladi. 180 km/soat parvoz tezligida Samarqand-Termez reysi (650 km) uchun qancha benzin kerakligini aniqlang. Aniqlang: chiqindi gazlarning umumiy hajmi, agar 1 litr yondirilgan benzin 16 kubometr turli gazlar aralashmasi hosil bo'lishiga olib kelsa; toksiklikning miqdoriy ko'rsatkichlari quyidagicha bo'lsa (CH 0,2 g/km gacha; CO 2,1 g/km gacha; NOx 0,15 g/km gacha).

Sharti:

N= 300 kVt $\quad m \cdot q \cdot \eta = N \cdot t \quad t = \frac{V}{s} \approx 3\ s$

$\eta$=0,16 $\quad m = \frac{N \cdot S}{V \cdot q \cdot \eta} = \frac{300 \cdot 1000 \cdot 650 \cdot 1000}{50 \cdot 11000 \cdot 0.3} = 300$ kg

S= 650 km $\quad V = \frac{m}{\rho} = \frac{300}{800} = 0.375$ m$^3$=375 l

V=180 km/s =50 m/s $\quad$ gaz chiqindilari

q=11000 J/kg $\quad V_G = 375 \cdot 16 = 6000$ м$^3$

$\rho = 800$ kg/m$^3$

$m^3/G = 16$ l

m - ? $V_G$ - ?

Gaz chiqindilari $V_G$ =375 = 6000 $m^3$ ni tashkil qiladi.

2. Avtomobil 300 km yurganda dvigatelidagi benzin sarfini aniqlang, agar o'rtacha quvvati 210 kVt, uning tezligi 20 km/soat, foydali ish koeffitsenti 16% bo'lsa. chiqindi gazlarning hajmini aniqlang?

Sharti:

N= 300 kVt

η=0,16

S= 650 km

U=20 km/s ≈ 6 m/s

q=11000 Ж/кг

ρ = 800 kg/$m^3$

G = 16 $m^3$ /l

V - ? $V_G$ - ?

1kal= 4,19 Ж

Q ·η =A

$m \cdot q \cdot \eta = N \cdot \frac{S}{U}$

$m = \frac{N \cdot S}{V \cdot q \cdot \eta \cdot 4.19 \cdot 1000} = 167.7$ kg

$V = \frac{m}{\rho} = \frac{167.7}{800} \approx 0.21 м^3$ yoki 210 l

gaz chiqndilari

$V_G$ =210·16= 3360 $m^3$

Benzin sarfi-210 l

Gaz chiqindilari -3360 $m^3$ ni tashkil qiladi.

3. Foydali ish koeffitsenti 30% bo'lgan qor yerituvchilar yordamida 20 $m^2$ maydondagi hovlidan qorni olib tashlamoqchi. Agar qor qoplamining qalinligi 70 sm va qor harorati -100 C bo'lsa, buning uchun qancha o'tin kerakligini hisoblang. Qorning solishtirma og'irligi 0,6 g/$sm^3$, solishtirma issiqlik sig'imi 0,4 kal/g•grad. O'tinni yoqishdan hosil bo'lgan kul miqdorini aniqlang.

4. Xonadagi xona haroratini saqlab turish uchun bir kunda 2400 kkal talab qilinadi. Dala hovlidagi xona kechasi 30% foydali ish koeffitsienti bilan isitiladi. Har kuni isitish uchun qancha qayin o'tinini ishlatish kerak? O'tinning to'liq yonishi paytida hosil bo'lgan kul miqdorini aniqlang. 1 kal = 4,19 J.

Q=24000kkal/sutki

$\eta$ =30%

q=3200kkal/kg

$N_2$=3%

m-? $m_2$ -?

$Q_1 = Q$

$Q_1 = m \cdot \eta \cdot q$

$m \cdot \eta \cdot q = 24000$

$m = \frac{24000}{3200 \cdot 0.3} = 25$ kg

$m_2 = 25 \cdot 0.03 = 0.75$ kg

O'tin miqdori - 25 kg

Hosil bo'lgan kul miqdori 0,75 kg ni tashkil qiladi

5. 4m x 5m x 3m o'lchamdagi dala hovlisi sovuq devorlar va derazalar orqali bir daqiqada 6 kkal yo'qotadi. Xonadagi havo harorati kun davomida o'zgarmasligi uchun foydali ish koeffitsienti 20% bo'lgan pechkada qancha yog'och yoqish kerak? Qo'shimcha ravishda havoni 100C ga isitish uchun qancha yog'ochni yoqish kerak. O'tinning to'liq yonishi paytida hosil bo'lgan kul miqdorini aniqlang.

$V=4\cdot 5\cdot 3=60m^3$

$Q=6kkal/min$

$\eta$ =20%

$q = 3200kkal/kg$

$\Delta t = 10^0$ C

$C=0.24\cdot 10^3$ Jkg·$^0$ C

$\rho = 0.00139\cdot 10^3 kg/m^3$

$N_2$= 3 %

$Q_1 = Q_2$

$Q_1 = m\cdot\eta\cdot q$ $Q_2 = Q\cdot 60\cdot 24$

$m\cdot\eta\cdot q = Q\cdot 60\cdot 24$

$m_1 = \frac{Q\cdot 60\cdot 24}{\eta\cdot q} = \frac{6\cdot 60\cdot 24}{3200\cdot 0.2} = 13.5kg$

$Q_3 = Q_4$

$m_2\cdot\eta\cdot q = m\cdot c\cdot\Delta t$

$m_3\cdot\eta\cdot q = \rho\cdot V\cdot c\cdot\Delta t$

$m_3 = \frac{\rho\cdot V\cdot c\cdot\Delta t}{\eta\cdot q} = \frac{0.00139\cdot 60\cdot 2400\cdot 10}{3200\cdot 0.2} = 0.29$ kg

$m_2 = 13.5\cdot 0.03 = 0.405$ kg

m-? $m_1$ -? $m_2$ -?

O'tin miqdori - 13,5 kg

Qo'shimcha o'tin miqdori - 0,29 kg

Hosil bo'lgan kul miqdori - 0,405 kg ni tashkil qiladi.

Tabiiy gazning asosiy qismini metan ($CH_4$) tashkil yetadi - 92-98%. Toza tabiiy gaz rangsiz va hidsiz bo'ladi. Gaz chiqishini uning hidi bo'yicha aniqlash uchun gazning 1000 $m^3$ iga 16 g miqdorida odorantlar qo'shiladi. Gaz gorelkalari uchun tabiiy gazdan foydalanganda ifloslik miqdori 1% dan oshmasligi kerak. Gazning yonishida foydali ish koeffitsenti taxminan 90% ni tashkil qiladi.

6. Ochiq (marten) pechkalari tabiiy gazda ishlaydi. Agar pechning foydali ish koeffitsenti 40% bo'lsa, 50 t po'latni eritish uchun qancha gaz sarf qilinishi kerak? Po'latning boshlang'ich harorati 200 C, solishtirma issiqlik sig'imi 0,463 J/kg*K, solishtirma erish issiqligi 2,7•105 J/kg, erish harorati 1500 0C, gazning yonish issiqligi 4,4•107J/ kg. Gazni yoqish paytida hosil bo'lgan aralashmalar miqdorini aniqlang.

$m_1 = 50т = 5\cdot 10^4$ kg

$\eta$ = 40%

Metalni qizdirish va eritish uchun zarur bo'lgan issiqliq miqdori:

$Q_1 = m_1\cdot c_1(T_2-T_1) + \lambda m_1$

Gaznu yoqishda ajralib chiqadigan issiqliq miqdori, 50 tonna po'lat eritish uchun sarflanadi.

$t_1 = 20\ ^0C$ $T_1 = 293\ ^0K$

$t_2 = 1500\ ^0C$ $T_2 = 1773\ ^0K$

$Q_2 = \eta\cdot m_2\cdot q$

$Q_1 = Q_2$

$m_1\cdot c_1(T_2-T_1) + \lambda m_1 = \eta\cdot m_2\cdot q$

$c_1 = 0.46 \cdot 10^3$ G/kg$^0$K

$\lambda = 2.7 \cdot 10^5$ G/kg

$q = 4.4 \cdot 10^7$ G/kg

$\eta_{gaz} = 90\ \%$

$m_2$ -? $M_{yonish}$ -?

$$m_2 = \frac{m1 \cdot c1(T2-T1) + \lambda m1 + \eta \cdot m2}{\eta \cdot q} \approx 2700 \text{ kg}$$

$m_{yonish} = 270$ kg

Xulosa sifatida shuni aytish mumkinki, so'nggi paytlarda yekologik ta'limga bo'lgan qiziqish qiziqish keskin oshdi. Inson tabiatning bir qismidir: u undan tashqarida yashay olmaydi, uni o'rab turgan dunyoda mavjud bo'lgan qonunlarga bo'ysnib yashaydi va ularni buza olmaydi. Tabiat bilan to'liq uyg'unlikda, birgalikda yashash orqaligina biz uning sirlarini yaxshiroq tushunib olamiz va Yerdagi hayotni saqlab qolishimiz mumkin.

Fizika o'qitish jarayonida o'quvchilarning yekologik ta'lim va tarbiyasi, yeng avvalo, ularda tabiatning yaxlitligi, unda sodir bo'layotgan hodisalarning o'zaro bog'liqligi va ularning sababiyligi, inson va tabiatning o'zaro ta'siri haqidagi tasavvurlarini shakllantirish, natijada tabiiy jarayonlarning ma'lum bir muvozanatining buzilishi bilan bog'liq. Fizika o`qitishning yekologik yo'naltirilganligi asosan tabiat hodisalarini, shuningdek, inson faoliyatining bizni o'rab turgnn olamga ta`sirini hisobga olish natijasida mustahkamlanadi. Bu talabalarga jamiyat va tabiatning tobora murakkablashib borayotgan o'zaro ta'sirini chuqurroq, to'liqroq va to'g'ri tushunishga, insonning uning hayotiga noto'g'ri o'ylangan aralashuvi xavfi haqida bilishga va tabiat haqida, tabiiy resurslarni muhofaza qilish va ulardan foydalanish haqiagi ma'lumotlarni oqilana boshqarish imkonini beradi. Ular ushbu ma'lumotni ilmiy-ommabop adabiyotlardan, radio va televideniе dasturlaridan olishadi, ular muayyan texnik yechimlarning yekologik oqibatlarini baholashlari va atrof-muhitni faol himoya qilish uchun fizikaviy bilimlaridan foydalanishlari juda katta samara beradi. Bularni yanada yaxshiroq tushinishlari uchun fizika darslarida ekologik mazmundagi masalalarni yechishning o'rni juda yuqori hisoblanadi.

Fizika darslarida ekologik mazmundagi masalalarni echish yekologik madaniyatning umumiy darajasini oshiradi, fizika faniga qiziqish va uni o'qitish sifatini oshiradi.

O'rta umum ta'lim maktablari, kasb-hunar ta'limi davlat ta'lim muassasalari va oliy ta'lim muassasalari o'qituvchilari uchun yekologik ta'limni tashkil yetishda, ya'ni, darslar, konferentsiyalar tayyorlash, darsdan tashqari tadbirlar, ekologik ekskursiyalar o'tkazishda ushbu maqoladagi ma'lumotlardan foydalanish juda foydali bo'ladi.

**Foydalanilgan adabiyotlar:**

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# ОБРАЗОВАНИЕ $\Delta^0$-ИЗОБАР В ЦЕНТРАЛЬНЫХ $p^{12}C$- И $d^{12}C$-СОУДАРЕНИЯХ ПРИ 4.2 *A* ГэВ/С

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**Аннотация.** Данная работа посвящена исследованию характеристики центральных pC- и dC - соударений при импульсе 4.2 ГэВ/с. Представлены экспериментальные результаты по изучении образования $\Delta^0$-изобар в рассматриваемых соударениях. Были получены ээкспериментальные и нормированные к ним фоновые распределения эффективных масс протонов и $\pi^-$-мезонов.

**Ключевые слова:** адрон- и ядро-ядерные соударения, $\Delta^0$-изобар, $\pi^-$-мезонов, эффективные массы протонов, ускоритель, пропановая камера, углерод.

**Abstract.** This work is devoted to studying the characteristics of central pC- and dC-collisions at a momentum of 4.2 GeV/c. Experimental results on the study of the formation of $\Delta^0$ isobars in the considered collisions are presented. Experimental and normalized background distributions of the effective masses of protons and π–-mesons were obtained.

**Key words**: hadron- and nucleus-nucleus collisions, $\Delta_0$-isobars, $\pi^-$-mesons, effective masses of protons, accelerator, propane chamber, carbon.

Известно, до настоящего времени не создана теории сильных взаимодействий. Здесь важный рол играет изучении множественные процессы, где рождаются множество вторичных заряженных и нейтральных частиц образованных в неупругих адрон –ядерных и ядро –ядерных взаимодействиях в широком энергетическом интервале. Для получение полезную информации необходимо анализировать процессы, где участвует много нуклонов при взаимодействии.

Одна из фундаментальных задач в современной ядерной физике является изучение ненуклонной степени свободы. В начале была обнаружена протон – нейтронный состав ядра, затем квазинуклонов, пионов, барионных резонансов, партонов, кварков и глюонов. Работы посвященные этим событием было освещено в многочисленных научных и популярных работах и обзорах [1−11]. Что касается барионных резонансов, актуальности образование Δ резонанса на сегодняшний день продолжает оставаться важной темой для исследований, как экспериментаторов, так и теоретиков. Это связано с тем, что Δ резонансы может

образоваться в различных сильных и электромагнитных взаимодействиях под действием различных частиц -пионов, барионов, ядер, γ-квантов и электронов. Кроме этого, не все существующие теоретические модели не позволяют однозначно описать всю суммарную экспериментальных данных по рождению Δ резонанса. Полученные результаты в этих работах показали, что разные характеристики (ширина и масса) Δ резонанса, рожденного в столкновениях ядер отличаются от таковых для Δ резонанса, рожденного в столкновениях свободных нуклонов.

Использованный экспериментальный материал в данной работе получен с помощью 2-метровой пропановой пузырьковой камеры ЛВЭ ОИЯИ, облученной пучками протона и ядер дейтрона и при импульсе 4.2 ГэВ/с на нуклон на Дубненском синхрофазотроне и состоит из 6736 *p*C-, 7071 *d*C- событий.

Отрицательные π-мезоны идентифицируются визуально только по знаку заряда. Среди них примесь неидентифицируемых электронов не превышает 5%, а отрицательных странных частиц – 1%. Нижняя граница импульса, начиная с которой заряженные пионы уверенно идентифицируются, составляет 70 МэВ/с.

Все вопросы связанной с методической особенности эксперимента приведены в [12−19]. В отличие от [19] в данной работе учтены вклады в импульсные характеристики вторичных $\pi^-$-мезонов, длина проекции треков у которых составляет меньше 4 см. Для таких π-мезонов были измерены только их углы вылета, естественно невозможно было вычислить их импульсы из-за короткой длины проекции треков в рабочем объеме камеры. Восстановление импульсов таких $\pi^-$-мезонов проводилось следующим образом. Были построены импульсные спектры $\pi^-$-мезонов с длиной проекции треков больше 4 см, разбивая их на 18 гистограмм по их углу вылета θ ($0 \le \theta \le 180°$) в лабораторной системе с шириной углового интервала $\Delta\theta=10°$. Далее, в соответствии с измеренным углом вылета $\pi^-$-мезонов, длина проекции треков у которых меньше 4 см, случайным образом разыгрывался значение их импульса по той или иной импульсной гистограмме.

В настоящей работе представлены новые экспериментальные данные о различных характеристиках $\Delta^0$-изобар, образованных в центральных $p^{12}C$- и $d^{12}C$-соударениях при 4.2 *A* ГэВ/с.

Поскольку, что в обоих соударениях среднее число протонов оказалось близки к 1 (см. табл.), к центральным соударениям относились те $p^{12}C$- и $d^{12}C$-соударения, в которых число протонов-участников ≥3. На рис. 1 и 2 приведены массовые спектры $\Delta^0$-изобар в рассматриваемых соударениях, соответственно.

**Таблица. Значение массы $M_\Delta$ и ширины массового спектра Г $\Delta^0$-изобар**

| Тип соударений | Среднее число протонов-участников | $M_\Delta$, МэВ | Г, МэВ | $\chi^2$/чис.степ.своб. |
|---|---|---|---|---|
| $p^{12}C$ | 0.91±0.01 | 1235±3 | 51±6 | 0.69 |
| $d^{12}C$ | 1.12±0.01 | 1234 ±2 | 44.9±3.8 | 0.54 |

Значения массы, ширины массы и средняя число протонов-участников образованных в центральных pC - и $d^{12}C$-соударениях приведены в таблице.

Как видно из табл. 1 ширина массового спектра $\Delta^0$-изобар, в обоих типах соударений близко к друг другу.

Получены средние множественности протонов участников образованных в центральных $p^{12}C$- и $d^{12}C$-соударениях при 4.2 *A* ГэВ/с и они оказались совпадающими в пределах статистических погрешностей, составляя 0.91 ± 0.01 и 1.12 ± 0.01, соответственно (см. табл.) .

На рис. 1 и 2 представлены экспериментальное и фоновое распределение эффективных масс протонов и $\pi^-$-мезонов в в центральных $p^{12}C$- и $d^{12}C$-соударениях. Экспериментальное распределение по инвариантной массе пар $(p\pi^-)$ было получено путем комбинирования протонов и пионов в каждом отдельном экспериментальных событии. Фоновое распределение по инвариантной массе пар $(p\pi^-)$ было получено путем комбинирования протонов и пионов, подобранных случайным образом из разных событий.

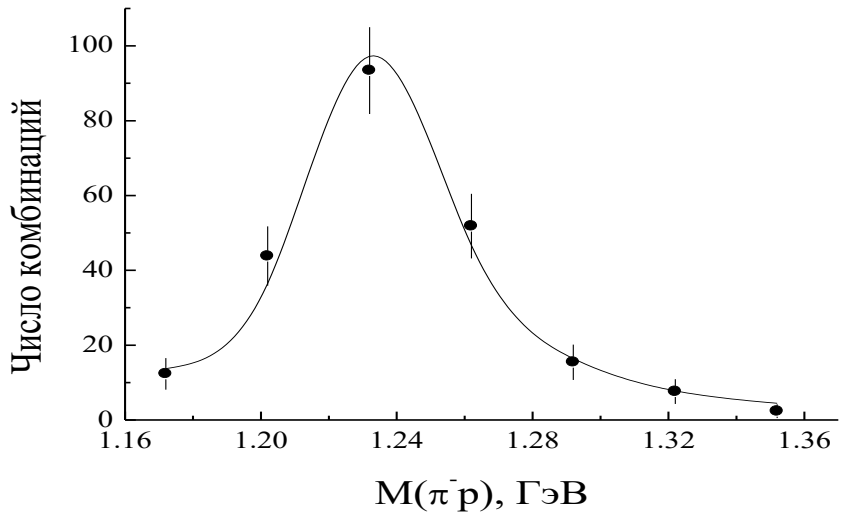


Рис.1. Распределение по эффективной массе $\pi^-$p -пар в центральных соударениях $p^{12}C$-взаимодействий при 4.2 ГэВ/с.

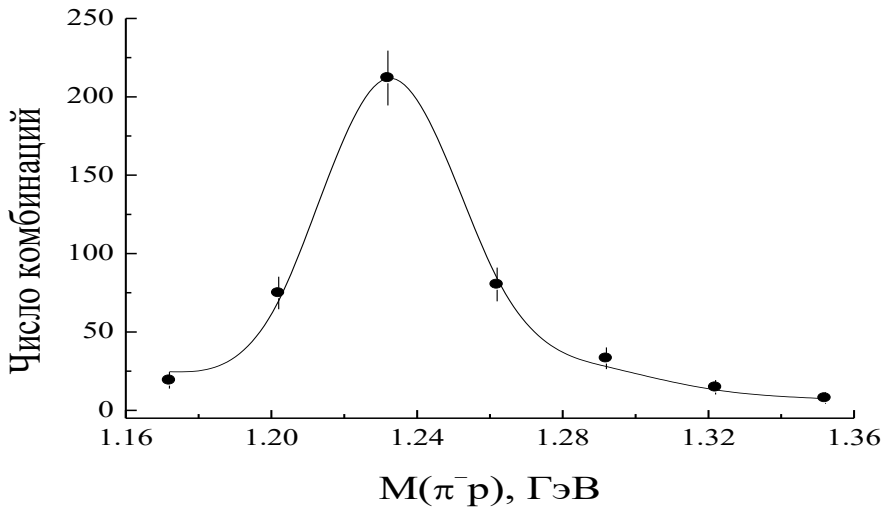


Рис.2. Распределение по эффективной массе π–p -пар в центральных соударениях $d^{12}C$-взаимодействий при 4.2 ГэВ/с.

Из рисунков видно, что для большинства пар $(p\pi^-)$ экспериментальный спектр $dn/dM$ содержит большой вклад от некоррелированных пар протонов и пионов.

Кривые на рисунках – результат аппроксимации экспериментальных спектров эффективных масс протон и $\pi^-$ пар $M(\pi^-p)$ по релятивистской формуле Брейта-Вигнера [9]: Результаты аппроксимации приведены в табл. 1.

Экспериментальные распределения получены используя разных разработанных критерии, путем комбинирования протонов и $\pi^-$-мезонов в каждом отдельном событии. Фоновые распределения строилось по тем же критериям, что и экспериментальные распределения, но комбинировались протоны и пионы, подобранные случайным образом из разных событий.

Выделение $\Delta^0$-изобар выполнено в соответствии с процедурой, приведенной в [11]. На рис. 1 и 2 приведены экспериментальные и нормированные к ним фоновые распределения эффективных масс протонов и $\pi^-$-мезонов.

$$F(M) = \frac{CM\Gamma M_\Delta}{(M^2 - M^2{}_\Delta)^2 + \Gamma^2 M^2{}_\Delta}$$

где $M_\Delta$ и $\Gamma$ – масса и ширина резонанса. Набор распределений $D(M)$ для различных значений параметров $\varepsilon$ и $a$ фиктировался функцией Брейт-Вигнера $b(M)$ и значение $\chi^2$ было найдено для каждого фита. Параметры $M_\Delta$ и $\Gamma$ были определены путем минимизации разности $|D(M) - b(M)|$.

Из рисунков 1, 2 видно, что спектры хорошо описывается данной формулой со значениями $M_{pC}$=1235±3 МэВ/$c^2$ $M_{dC}$=1234 ±2 МэВ/$c^2$ и $\Gamma_{pC}$=51 ± 6 МэВ и $\Gamma_{dC}$=44.9±3.8 МэВ для изучаемых центральных $p^{12}C$- и $d^{12}C$-соударений. Средние

значении по эффективной массы и полуширины для обоих типов соударений в пределах ошибок совпадают. При этом доля $\pi^-$-мезонов от распада $\Delta^0$-изобар оказалась равной 36 ± 4%. Этот результат в пределах статистических погрешностей совпадает с данными работы [11].

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# UN MAHSULOTLARIGA YOD ELEMENTINI QÓSHISH USULLARI

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*8-A sinf o‘qituvchisi*

**Annotatsiya:**Maqolada yod xavfni baholash metodologiyasi haqida gap boradi, bu esa bizga yod haqida ma’lumotlarni bilishimiz imkon beradi yodlangan tuz va fortifikatsiyadan foydalanish samaradorligi haqida xulosalar chiqarish yod tanqisligini bartaraf etish uchun yod bilan boshqa oziq-ovqat mahsulotlarini o‘rganamiz.

**Kalit so‘zlar:**xavfni baholash usuli, boyitilgan oziq-ovqat mahsulotlari, yod tanqisligi kasalliklari

## Kirish

Ushbu Yo'riqnoma talablarga muvofiq ishlab chiqilgan GOST 25832-89 "Diyet non mahsulotlari", tasdiqlangan Pridnestrovian Moldaviya sanoat vazirligi buyrug'i bilan 2002 yil 29 noyabrdagi N 483-son (ro'yxatga olingan N 1892, 5-son) 2002 yil dekabr) (SAZ 02-49) yod tanqisligini oldini olish maqsadida Pridnestroviya Moldaviya Respublikasi aholisi o'rtasidagi kasalliklar va qat'i nazar, barcha tashkilotlar uchun majburiydir idoraviy bo'ysunish va mulkchilik shakli va jismoniy non mahsulotlari ishlab chiqarish bilan shug'ullanuvchi tadbirkorlar deb belgilanadi

**Tatqiqot natijasi**

Sintez uchun zarur bo'lgan eng muhim elementlardan biri Qalqonsimon bez gormoni yoddir. Yod - bu mikroelement, o'sish, aqliy va jismoniy rivojlanish uchun zarur va tananing hayotiy faoliyati. Yodning etarli darajada iste'mol qilinmasligi hosil bo'ladi sog'liq uchun jiddiy tahdid, bolalarda letargiyaga olib keladi, jismoniy zaiflik, aqliy tanazzul, kattalar populyatsiyasida yod tanqisligi kasalliklari, ular orasida eng ko'p odamning yuqumli bo'lmagan keng tarqalgan kasalliklari. Hatto fonda ham O'rtacha yod tanqisligi barchaning intellektual qobiliyatini pasaytiradi intellektual va jiddiy xavf tug'diradigan aholi Dnestryanı Moldaviya aholisining iqtisodiy salohiyati

respublika. Yo'q qilishga qaratilgan profilaktika choralari

yod tanqisligiga massa, guruh va individual yod profilaktikasi: a) aholining ommaviy yod profilaktikasi - foydalanish yodlangan osh tuzi va oziq-ovqat mahsulotlarida aholi; yod bilan boyitilgan.

b) guruhli yod profilaktikasi- muntazam ravishda amalga oshiriladi o'z ichiga olgan dori-darmonlardan uzoq muddatli foydalanish kaliy yodidning fiziologik dozasi, eng yuqori aholi guruhlari yod tanqisligi bilan bog'liq kasalliklarni rivojlanish xavfi (bolalar, o'smirlar, homilador va emizikli ayollar).

v) individual yod profilaktikasi - foydalanish profilaktika dori-darmonlari,

boyitilgan oziq-ovqat mahsulotlari yod, yodning fiziologik iste'mol darajasini ta'minlash har biri uchun alohida yod tanqisligini bartaraf etish uchun tana odam.

Pridnestroviya Moldaviya Respublikasi hududida yo'q hududida aholisi ta'sir qilmaydigan aholi punktlari yod tanqisligi kasalliklarini rivojlanish xavfi. Ustuvor usullardan biri Pridnestrovian Moldaviya aholisi orasida yod tanqisligini bartaraf etish Respublikada iste'mol bozorini yod bilan boyitilgan oziq-ovqat mahsulotlari bilan to'ldirish davom etmoqda. Bu muammoni hal qilish mumkin faqat kundalik oziq-ovqat mahsulotlarini yodlash orqali, inshu jumladan non va non mahsulotlarini yod bilan boyitish.Non tarkibidagi yod miqdorini oshirishingiz mumkin chunki uning retseptiga kaliy yodidni kiritish orqali (ko'ra GOST 4232-74 ga muvofiq, Pr buyrug'i bilan kuchga kiradi Idnestroviya Moldaviya Respublikasi 17 fevral 2003 yil 68-son (2003 yil 3 martdagi N 2029-son) (SAZ 03-10) un og'irligi bo'yicha 0,00026% dozada yoki 1,1% km dozada dengiz o'tlari kukuni qo'shib eshak uni. Yod o'z ichiga olgan moddalarning bunday dozasi bilan 100 g nonda 0,1-0,2 mg yod mavjud. Bo'limlarda aralashtirilganda, kaliy yodid, erigan suvda qaynatiladi yoki dengiz o'tlari kukuni qo'shiladi xamirturush, eritma bilan birga xamir qorishda yot tuz yoki shakar. Keyin idishga un qo'shiladi va xamir qoriladi

| Мо-дель | Содержание йода | Потребление |
|---|---|---|
| 1 | естественное во всех группах пищевой продукции | средний уровень (медиана) |
| | | высокий уровень (90-й процентиль) |
| 2 | естественное в отдельных видах пищевой продукции, колбасные и хлебобулочные изделия изготавливаются с использованием йодированной соли | средний уровень (медиана) потребления всех видов пищевой продукции |
| | | высокий уровень (90-й процентиль) |
| 3 | естественное в отдельных видах пищевой продукции, колбасные и хлебобулочные изделия изготавливаются с использованием йодированной соли, молочные продукты изготавливаются с использованием йодказеина, яйца обогащены йодом путем биообогащения | средний уровень (медиана), доля обогащенных пищевых продуктов может составлять 10, 50 и 100% от общего потребления в рационе |
| | | высокий уровень (90-й процентиль), доля обогащенных пищевых продуктов может составлять 10, 50 и 100% от общего потребления в рационе |

*Таблица 1.* Модели оценки алиментарного поступления йода

Shunday qilib, tavsifni hisobga olgan holda bu yondashuvlar o'zini oqladi Baholash uchun quyidagi modellar mavjud dietadan yod olish (1-jadval).

**Muhokama**

Olingan dalillar ma'lumotlari foydalanayotganda buni bildiring .Og'irlashtirilgan stsenariylar tadqiqot instituti (o'rtacha umumiy oziq-ovqat iste'moli - umumiy mahsulotlar va ulush 10, 50 darajasida boyitilgan va 100%, yuqori umumiy iste'mol umumiy oziq-ovqat va mustahkamlash ulushi chayqalish - 10, 50 va 100% darajasida

dietadan yod iste'moli ortadi nisbatan 2,3-7,3 raa ni tashkil qiladi oziq-ovqat iste'moli bilan kelishmovchilik tabiiy tarkibi bilan. Yodlangandan foydalanish iste'molchi tomonidan tugatish uchun tuz kuniga 5 g miqdorida ma'muriyat (JSST tavsiyalari darajasida) yanada oshishiga olib keladi dietada yod miqdorini tekshirish kuniga 366,2–879,9 mkg gacha. Qayerda belgilangan qiymatlardan oshmaydi yuqori xavfsizlik qiymatlari bu iste'molning yangi darajasi mikroelement (kuniga 1100 mkg

| Характеристика модели потребления | Уровень йода в рационе | | |
|---|---|---|---|
| | доля пищевой продукции, обогащенной йодом | | |
| | 10% | 50% | 100% |
| 3: | без учета использования йодированной соли для досаливания* | | |
| медиана | 166,2 | 201,1 | 244,8 |
| 90-й процентиль | 472,4 | 564,6 | 679,9 |
| 3: | с учетом использования йодированной соли для досаливания* | | |
| медиана | 366,2 | 401,1 | 444,8 |
| 90-й процентиль | 672,4 | 764,6 | 879,9 |

*Таблица 2.* Результаты изучения поступления йода в составе рационов взрослых г. Минска (мкг/сутки)
* исходя из употребления 5 г соли в сутки со средним содержанием йода 40 мкг/г

).

Hozirda igna bilan oziq-ovqat mahsulotlarini pishirish yodlangan foydalanish bilan birga boshqa tuzlar yod ishlatiladi -tarkibiy qismlarni o'z ichiga olgan, masalan. Tadqiqot natijalari kompozitsiyada yodni iste'mol qilishni kamaytirish.Minskdagi kattalar uchun ratsion 2 jadvalda keltirilgan.

**Xulosa**

Shunday qilib, amalga oshirish yodni yo'q qilish strategiyalari etishmovchilik kasalliklari va tufayli yodlangan foydalanish alohida ishlab chiqarishda tuzlar har xil turdagi oziq-ovqat mahsulotlari ishlab chiqarish o'sishiga hissa qo'shdi dietada yod miqdorini o'zgartirish, fiziologik ta'minlash ma'lum mikro- kattalar aholisi orasida ozuqa moddalari lenition va sezilarli qisqarish alohidalarning tarqalishi qalqonsimon bez kasalliklarining har xil turlari jele . Baholash metodologiyasi bog'liq sog'liq uchun xavflar oziq-ovqat boyitish bilan duction, ishlamoqda xohlaydigan vosita samaradorligini bashorat qilish profilaktika tadbirlari mikronutrient holatlari etishmovchilik va ularning xavfsizligi ortiqcha post-boyitish komponentlarini ulashish kerak.

# BUXORO VILOYATI SHAROITIDA KARTOSHKA HOSILINI YIG'ISH VA SAQLASH

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**Annotatsiya:** Mazkur maqolada Buxoro viloyati sharoitida kartoshkan hosilini yig'ish, saqlash usulari, rejimi va saqlashda qo'yiladigan talablar haqida ma'lumot keltirilgan.

**Kalit so'zlar**: kartoshka tugunagi, to'qima, harorat, saqlash omborlari, yig'ish, saqlash usuli, yerto'la, harorat

**Аннотация:** В данной статье представлена информация о уборке, способах хранения, режиме и требованиях к хранению картофеля в условиях Бухарской области.

**Ключевые слова**: картофельный клубень, ткань, температура, склады хранения, сбор, способ хранения, погреб, температура.

**Abstrakt** : This article provides information about harvesting, storage methods, mode and requirements for storing potatoes in the conditions of the Bukhara region.

**Key words**: potato tuber, fabric, temperature, storage warehouses, collection, storage method, cellar, temperature.

Mamlakatimizda yetishtirilgan qishloq xo'jalik mahsulotlarini saqlash miqdori yil sayin ko'payib bormoda. Bu aholini yil bo'yi arzon va sifatli oziq-ovqat mahsulotlari bilan ta'minlash imkoninini beradi.

O'zbekiston, xususan Buxoro iqlim sharoiti issiq mintaqa hududiga taalluqli bo'lib, yil faslining har bir davrida haroratning o'zgaruvchanligi bilan ajralaib turadi, shuning uchun meva va sabzavotlarni saqlash davrida sifatiga ta'sir qiladigan hamma jarayonlarni va omillarni ko'ra bilish zarurdir.

Ko'pchilik hollarda kartoshka o'sib turgan palagi bilan kovlanadi. Hosilni mashinalar yordamida yig'ib olishni osonlashtirish uchun palak yuladigan kosilkalardan foydalaniladi. Kartoshka kovlangandan keyin dalaning o'zida bir necha soat davomida quritiladi va mayda-yirikligiga qarab saralanadi. Bunda vazni 25-30 g

dan yuqori bo‘lgan yirik va o‘rtacha tuganaklar tovar mahsulot sifatida ajratiladi. Mayda va shikastlangan tuganaklar yaroqsizga chiqariladi.

Yog‘inli kunlarda kovlangan kartoshka ombor yoki usti berk bostirmalarda 2-3 kun davomida quritiladi. Agar hosilni yig‘ish davrida qora sovuqlar tushib qolgudek bo‘lsa, sovuq urgan tuganaklarni aniqlash maqsadida kartoshka issiq binolarda bir necha kungacha saqlanadi. Bunda sovuq urgan tuganaklarning hamma qismi yoki ayrim joylari yumshab, ajralib qoladi.

Kartoshka kovlangandan keyin tuganaklar 20-30 kun davomida kuchli nafas oladi va vaznini ancha yo‘qotadi. Kartoshka qorong‘i joyda, havo namligi va harorat yuqori bo‘lgan sharoitda saqlansa, tuganaknnng shikastlangan qismida po‘kaksimon to‘qima hosil bo‘ladi. Bu to‘qima tuganakni nam yo‘qotishdan va uning ichiga mikroorganizmlar kirishdan saqlaydi.

Kartoshka 10°S dan past haroratda saqlanadi. Maksimal darajada saqlash uchun harorat esa 2 dan 4° S gacha, yerto‘la, o‘ra kabi qorong‘u va salqin joy bo‘lishi kerak.

Saqlash uchun sog’lom kartoshkalar ajratiladi. Xona harorati +3 +4ºS iliq, havo almashib turadigan joy bo‘lishi kerak. Nazorat qilib turish uchun yashik va polkalar bo‘lgani ma’qul. Xona doimiy qorong‘u bo‘lishi kerak. Aks holda kartoshka tugunaklari ko‘k rangga o‘tib ketadi. Bu juda ham zaharli holatga o‘tish bo‘lib, oziq-ovqatga ishlatish mumkin emas. Agar qorong‘u joy ta’minlanmasa, ustiga qora qog‘oz yoki boshqa biror narsa yopish kerak. Kartoshka saqlashga qo‘yilib, 5-6 hafta o‘tgandan so‘ng to‘liq qayta ko‘rikdan o‘tkazilib, zararlanganlari ajratib olinadi. Ko‘p massadagi kartoshkalar sog‘lomlari ajratib olinib, 4 - 5 kun rosa quritilib, so‘ng o‘ralarda saqlanadi. Kartoshka katta miqdorda saqlanganda balandligi bir metrdan oshmagani ma’qul. Kartoshka chuqurlarda saqlanganda, qazilgan chuqurlik 1,5 metrgacha bo‘lib, yarmigacha kartoshka solinadi. So‘ng ustiga 10-15 santimetr quruq qum solib, ustidan poxol va boshqa xashaklar bilan 50 santimetr balandlikda berkitiladi.

Sabzavotlarni saqlashga quyiladigan talablar. Har bir oziq-ovqat mahsuloti texnik jihatdan tartibga solish hujjatlariga — sanitariya qoidalari, me’yorlari va gigiena normativlari, davlat standarti (GOST), tashkilot standartiga asosan saqlanishining muayyan talablari belgilangan.

Ya’ni, har bir mahsulot qoida va me’yorlarda belgilangan ma’lum harorat va havoning nisbiy namligida saqlanishi lozim.

Saqlash rejimi quyidagi muhim omillarni o‘z ichiga oladi: harorat, havo namligi, havo almashinuvi, gaz muhiti va yorug‘lik tarkibi. Sabzavot mahsulotlarni saqlash jarayonida belgilangan havo haroratidan pasayib ketishi mahsulotlarning muzlab qolishiga sabab bo‘ladi.

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# O‘ZBEKISTONDA IPAKCHILIKNING RIVOJLANISH TARIXI VA ISTIQBOLLARI

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Annotatsiya: Ushbu maqolada yurtimiz yengil sanoatining eng yaxshi tarmoqlarida biri ipakchilik, uning yurtimiz tarixidagi o’rni hamda istiqbollari haqida so’z boradi.

Kalit so’zlar: Ipakchilik sanoati, tarmoq, pilla, qurt, rivojlanish,ipak yigirish

Ipakchilik sanoati - yengil sanoat tarmoqlaridan biri. Asosan, tabiiy va sun’iy ipak tolasi, yigirilgan ipak, sintetik hamda har xil tabiiy va sun’iy tolalar birikmasidan ipak (shoyi) gazlamalar to‘qib chiqaradi. Pilla chuvish (tortish), uning losidan ipak yigirish va to‘qilgan gazlamalarni pardozlash ham ipakchilik sanoatiga kiradi.

O‘zbekistonda ipakchilik tarmog‘i teran tarixiy ildizlar va an’analarga ega. Ipak qurti boqish va uning pillasidan tola olish, ipak gazmollar to‘qish dastlab Xitoyda vujudga kelgan.

Ayrim ma’lumotlarga ko‘ra, ipak qurti boqish 4-asrda Xitoydan Buyuk ipak yo‘li orqali hozirgi O‘zbekiston hududiga tarqalgan. Samarqand, Buxoro, Xo‘jand, Qo‘qon, Marg‘ilon, Namangan kabi shaharlarda ishlab chiqarilgan turli-tuman shoyi gazlamalar mashhur bo‘lgan. Shoyi gazmollar Yaqin Sharq va Yevropa mamlakatlariga chiqarilgan. Respublika mustaqillikka erishgandan keyin respublika hukumati ipakchilik sanoatini rivojlantirish masalalariga alohida e’tibor berdi. An’analar va ming yillik tajribalar negizida O‘zbekistonda zamonaviy yangi ipakchilik industriyasini yaratish yo‘li belgilandi. 1993- yildan pilla yetishtirish davlat buyurtmasidan chiqarilib, uni xarid qilish kelishilgan narxlar asosida olib boriladigan bo‘ldi. O‘zbekiston Respublikasi 1 - Prezidenti I. A. Karimovning 1998-yil 30 martdagi "Respublikada pillachilik sohasini boshqarish tizimini takomillashtirish to‘g‘risida" Farmoni va O‘zbekiston Respublikasi Vazirlar Mahkamasining 1998-yil 3 apreldagi "Respublika pillachilik sohasini boshqarishni takomillashtirish chora-tadbirlari to‘g‘risida"gi qaroriga ko‘ra mustaqil "O‘zbek ipagi" uyushmasi tashkil etildi.

Uning tarkibiga ipakli va aralash gazlamalar ishlab chiqaradigan shoyi to‘qish korxonalari, shuningdek, tabiiy shoyi va qayta ishlash bo‘yicha Markaziy ilmiy tadqiqot institutini ("Shoyi" tadqiqot instituti, Marg‘ilon) o‘z ichiga oladigan "Shoyi" aksiyadorlik kompaniyasi hamda pilla xomashyosi, ipak kalava ishlab chiqaradigan

pillakashlik korxonalari, ipak qurti tayyorlanadigan zavodlar, ipak qurti naslchilik xo‘jaliklari, xom pillani qabul qilish va dastlabki ishlov berish korxonalari, tutchilik xo‘jaliklari, O‘zbekiston ipakchilik ilmiy tadqiqot institutini o‘z ichiga oladigan "Pilla xolding" kompaniyasi kiradi. illa xom ashyosini respublikaning o‘zida qayta ishlanishini ta’minlash maqsadlarida 2000-yil fevral oyida O‘zbekiston Respublikasi Prezidentining Farmoni bilan pilla xomashyosi, ipak chiqindilari va ipak ipni respublikadan chetga chiqarishga chek qo‘yildi. O’zbekiston — ipakchilik sohasida boy tajriba, yuksak salohiyatga ega mamlakat. YUNESKO tomonidan o’zbek shoyi matolari — atlas va adras tayyorlashning qadimiy texnologiyasi nomoddiy madaniy merosni muhofaza qilish ro’yxatiga kiritilgani buning amaliy tasdig’i, dunyo hamjamiyatining yuksak e’tirofidir.

Ipakchilik sohasida etakchi hisoblangan Xitoy, Hindiston, Yaponiya, Janubiy Koreya kabi davlatlar investorlari bugun O’zbekistonga ishonchli hamkor sifatida qaramoqda. Buning asosiy sababi, pillachilik qisqa vaqt ichida mavsumiy tarmoqdan doimiyga aylantirilib, qulay ishbilarmonlik muhiti yaratilganidir.

Gap shundaki, yurtimizda tarkibida kamida 4-5 ta korxonani birlashtirgan pillachilik klasterlari yaratish sa’y-harakatlari allaqachon boshlab yuborildi. Ularda ipak qurti ozuqasini yetishtirishdan tortib, pilla olish, ipak yigirish, mato to’qish va undan tayyor mahsulot ishlab chiqarishgacha bo’lgan barcha bosqich qamrab olinadi.

Shu bilan birga, foydalanishga topshirilayotgan pillachilik majmualari qoshida parrandachilik, asalarichilik, chorvachilik hamda quyonchilikni rivojlantirish, ikkilamchi qishloq xo’jaligi mahsulotlari etishtirish imkoniyati paydo bo’lyapti.

Mamlakatimizda pillachilikni rivojlantirishga qaratilgan e'tibor, yaratilgan qator imtiyoz va imkoniyatlar o'z-o'zidan mazkur yo'nalishda faoliyatini olib borish istagidagi korxonalar sonining ortishiga zamin yaratdi. 2017 yilning sentyabr oyida O'zbekiston dunyo mamlakatlari orasida yigirmanchi davlat sifatida Xalqaro ipakchilik Kengashiga (ISC) a'zo bo'lgach, “O'zbekipaksanoat” uyushmasi qoshida 13 ta hududiy, 144 ta tuman “Agropilla” MCHJlar faoliyati yo'lga qo'yildi. Ayni paytda tizimda 11 ta ipak qurti urug'i tayyorlovchi, 71 ta klaster usulida pillani yetishtirish va qayta ishlash asnosida ipak mahsulotlari ishlab chiqaruvchi korxonalar mavjud. Jami 761 ming nafar, shundan, 24 ming 440 nafari doimiy va 736 ming 567 nafari mavsumiy ish o'rinlari yaratilgan. Oxirgi ikki yilda yangi loyihalarning amalga oshirilishi, sohada ilmiy-tadqiqot ishlarining rivojlantirilishi natijasida 10 ta ipak mato, ipak gilam va tayyor ipakli mahsulotlar, 3 ta ipak va jun aralashmalaridan qo'lda gilam to'quvchi yirik korxona hamda 1 ta ipak qurti g'umbagidan oqsil ishlab chiqaruvchi quvvat ishga tushirildi. Ipak qurti g'umbagidan yog' ishlab chiqarish, uning asosida esa qimmatbaho dorivor va farmakologik vositalar, kosmetologiya yo'nalishidagi mahsulotlar, pilla sovuni, shuningdek, tut bargidan choy ishlab chiqarish yo'lga qo'yildi.

“Inter Silk Pro” MCHJda esa hozirgi kunda ipak qurti g'umbagidan xitin va xitozan oqsillari ham tayyorlanyapti. Bu O'zbekiston Respublikasi Fanlar akademiyasining Polimerlar kimyosi va fizikasi instituti bilan birgalikda yo'lga qo'yilgan mazkur loyiha o'zini oqlayotganini ko'rsatadi. 2020 yil I-II mavsumlarda 20 610,9 tonna (101,47 foiz), takroriy IIIIV masumlarda 872,8 tonna (100,55 foiz) pilla xomashyosi yetishtirilishida mazkur korxonaning hissasi katta.

Shuningdek, joriy yilda ipak qurtining mahalliy zot va duragaylarini ko'paytirish aqsadida Samarqand va Farg'ona viloyatlarida superelita va elita urug'larini tayyorlaydigan 2 ta naslchilik korxonasi ishga tushdi. Ular tomonidan shu yilning o'zida 2447 ta dastlabki tuxum quymalari, 721 quti superelita va 1 800 quti elita urug'lari tayyorlandi. Uyushma tarkibidagi qayta ishlash korxonalarini pilla xomashyosi bilan muntazam ta'minlash natijasida ularning mavjud ishlab chiqarish quvvatlaridan foydalanish darajasi 2017 yildagi 54 foizlik daraja bugunga kelib 94 foizga etdi. Sohaning eksport hajmi esa 2020 yil yakunida 2017 yilga nisbatan qariyib 4 barobarga oshishi kutilmoqda. Kelgusida pillani qayta ishlash korxonalari negizida chuqur qayta ishlash va boshqa yo'nalishlar bo'yicha bir qator loyihalar amalga oshirilishi rejalashtirilgan. Sohani rivojlantirishda shubhasiz, xalqaro sherikchilik aloqalarni mustahkamlash, xorijiy investitsiyalarni jalb qilishga ham alohida e'tibor qaratilmoqda. O'tgan davr mobaynida pillachilik tarmog'iga jami 175,4 million AQSH dollari miqdorida investitsiya kiritilishi natijasida 40 ta pillani qayta ishlash korxonasi modernizatsiya qilinib, 2019-2020 yillarda 14 ta yangi pilla qayta ishlash, 4 ta ipak qurti urug'i, 1 ta tut bargidan choy ishlab chiqarish korxonalari barpo etildi. 2020 yilda sohaga jami 15,6 million AQSH dollari miqdorida investitsiya kiritilishi rejalashtirilgan bo'lib, shundan 6,34 million dollari korxonalarning o'z mablag'i, 6,04 million dollari tijorat bank kreditlari hamda 3,23 million ollari to'g'ridan-to'g'ri xorijiy investitsiyalarni tashkil etadi.

Bundan tashqari, ipakchilikni rivojlantirish bo'yicha bir qancha xalqaro hamkorlik kelishulariga ham erishilgan. 2018 yilning 4—13 iyul kunlari “O'zbekipaksanoat” uyushmasi delegatsiyasi Germaniya, Yaponiya, Xitoy, Vengriya, Avstriya, Italiya, Belgiya va Turkiya davlatlarida bo'lib, xalqaro tashkilotlar, ipakchilik sohasida faoliyat yuritayotgan hamda texnologik asbob-uskunalar ishlab chiqaruvchi etakchi kompaniyalar vakillari bilan tashkil etilgan uchrashuvlar davomida qator hamkorlik hujjatlarini imzolashga muvaffaq bo'ldi. Xususan, delegatlar YUNIDO (BMTning sanoatni rivojlantirish tashkiloti)ning bosh direktori janob Li Yong bilan uchrashib, O'zbekistonda pillachilik tarmog'ini rivojlantirish bo'yicha OFID (Neftni eksport qiluvchi davlatlar — OPEKning sanoatni rivojlantirish fondi) va FAO (BMTning Qishloq xo'jaligi va oziq ovqat tashkiloti) bilan birgalikda amalga oshiriladigan loyihalar bo'yicha muzokaralar olib bordi. To'qimachilik sohasida asbobuskunalar ishlab chiqarish bo'yicha dunyoning etakchi texnologik kompaniyalari —

“Picanol” va “Vandewiele” bilan tuzilgan strategik sheriklik shartnomalariga ko'ra, yurtimizda zamonaviy texnologiyalar bilan jihozlangan, ipakchilik sohasi xodimlari malakasini oshirishga yo'naltirilgan servis va o'quv markazini tashkil etish rejalashtirilgan. Sohada amalga oshirilishi ko'zlangan bunday xalqaro hamkorliklar hali talaygina. Ularning bari yagona maqsad — O'zbekistonda pillachilik va ipakchilik tarmog'ini rivojlantirish, jahon bozorida ipak mahsulotlarimizga bo'lgan talabni oshirish hamda milliy matolarimizning dunyo miqyosidagi o'rni va nufuzini yanada yuksaltirishga qaratilgan. Ta'kidlanganidek, O'zbekiston ipak ishlab chiqarish hajmi bo'yicha Xitoy va Hindistondan keyin dunyoda uchinchi o'rinni egallaydi. Shu jihatdan ipak valyuta tushumlarining ishonchli manbai hisoblanadi. Sohadan olinayotgan hosilning 70 foizi xomashyo, quritilgan pilla, ipak kalava va mato ko'rinishida Hindiston, eron, Xitoy, Bangladesh, Birlashgan Arab Amirliklari, Turkiya va Rossiya kabi mamlakatlarga eksport qilinadi. Bundan tashqari, pillachilik qishloq joylaridagi ko'plab oilalar bandligini ta'minlaydi. Shu jihatdan mazkur soha investitsiyalar uchun jozibador tarmoq hisoblanadi.

**Xulosa:**

Hozirgi kunda ipakchilik sanoati jadal rivojlanmoqda. Haqiqatan ham mamlakatimizning ipakchilik sanoati salohiyati nihoyatda yuqori. Bor kuch va imkoniyatlarni safarbar qilsak, qanchadan-qancha ish o‘rinlari ochiladi. Yurtimizda olib borilayotgan shiddatli islohotlardan ko‘zlangan maqsad ham shu — qaysi soha bo‘lmasin, uni odamlar uchun muhim daromad manbaiga, iqtisodiyotimiz tayanchiga aylantirishdan iborat.

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# ОЦЕНКА РИСКОВ СТРАХОВЫХ УСЛУГ В РЕСПУБЛИКЕ УЗБЕКИСТАН

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**Аннотация.** Структура активов узбекистанского страхового сектора оценивается нами как довольно консервативная (в ней преобладают денежные средства и инструменты с фиксированной доходностью), и мы ожидаем, что такая структура сохранится. В то же время мы отмечаем давление на средние показатели кредитного качества инвестиционных портфелей, поскольку значительную часть инвестированных активов составляют инструменты с рейтингами не инвестиционной категории, размещенные в узбекистанском банковском секторе.

**Ключевые слова:** страховая деятельность, страховой интерес, страховая премия, страховой рынок, страховые продукты, суброгация, приобретение, договор страхования, доход, имущество, имущественный интерес, ответственность, страхование

**Введение.** По нашему мнению, страновые риски в Узбекистане будут по-прежнему оказывать давление на нашу общую оценку отраслевых и страновых рисков страхового сектора (Insurance Industry and Country Risk Assessement — IICRA). Мы полагаем, что экономическая ситуация останется неблагоприятной для узбекистанских страховых компаний в ближайшие два года. Экономические риски остаются высокими, учитывая низкие показатели благосостояния населения, измеряемые показателем ВВП на душу населения (1 585 долл. США), и недостаточно развитую институциональную систему. По нашему мнению, экономика Узбекистана будет абсорбировать текущую нестабильность, и ее рост может возобновиться в среднем на 5% в 2021-2022 гг. S&P Global Ratings оценивает отраслевые и страновые риски сектора общего страхования в Республике Узбекистан как высокие – как и в России, Азербайджане, Индии, Кении и Турции.

На этом рынке, вероятнее всего, будет отмечаться небольшой рост в 2020 г. в связи с замедлением экономической активности. В 2021-2022 гг. темпы роста повысятся и будут в значительной степени зависеть от мер регулирующих органов, направленных на дальнейшее развитие страхового сектора, предложения новых продуктов и динамики макроэкономических показателей. По нашему мнению, институциональная система будет постепенно совершенствоваться, в том числе в связи с созданием во второй половине 2019 г.

отдельного органа, отвечающего за регулирование и развитие сектора страхования.

Мы считаем существенное улучшение или ухудшение нашей оценки IICRA маловероятным в ближайшие 12-18 месяцев, принимая во внимание текущие изменения в экономике и ожидаемые регуляторные меры по повышению прибыльности сектора, улучшению перспектив в отношении роста страховой премии и повышению эффективности режима регулирования.

Наша оценка странового риска отражает наше мнение о страновых рисках, которым подвергаются экономика, политика, финансовая система, платежная культура и принцип верховенства закона в Республике Узбекистан.

Мы считаем условия ведения операционной деятельности для узбекистанских страховых компаний неблагоприятными, принимая во внимание введение ограничительных мер в 2020 г., низкий уровень проникновения страховых услуг и лишь умеренные перспективы экономического роста в 2020 г., хотя они лучше, чем на некоторых других развитых и развивающихся рынках.

**Обзор литературы.** "Страхование" это как явление появилось не вчера и не сегодня, но, как отмечают экономисты Т. Маликов и Х. Шеннаев, из истории известно, что даже на ранних этапах развития человечества существовали отношения, связанные со страхованием. В первобытнообщинном строе те, кто жил в форме племени, создавали запасы продовольствия, чтобы избежать непредсказуемых, разнообразных событий. Почему-то нет сомнений, что резервы были созданы для компенсации тех потерь, которые были замечены, когда события, не связанные с волей человека, одним словом, были неожиданными и непредсказуемыми в то время. По мнению российского ученого М. Иванова, во времена правления царя Хаммурапи, правившего Вавилонским государством в 1792-1750 годах до н.э., члены торгового каравана имели взаимное согласие перед отправлением в путь [1]. Согласно этому соглашению, если имущество любого члена каравана было утеряно, украдено или разграблено пиратами, этот ущерб возмещался членами каравана. Однако с того времени, когда началась цивилизация человечества, и по сегодняшний день прошло несколько тысяч лет. Однако формирование резервов для компенсации убытков, понесенных в результате различных событий, которые являются одним из фундаментальных, научно обоснованных принципов страхования, сохраняется и сегодня.

По мнению У. Тургунова, Н. Бекнозова, вопросы специального страхования возникли в некоторых государствах в средние века. Транспортное обслуживание более мелкой отрасли, развитие международной торговли к XVIII веку. расширился ассортимент и масштабы подобных услуг в европейских странах. Конечно, если в первые периоды в основном страховались суда и грузы, то позже

было введено обязательное страхование пассажиров и членов экипажа. Эта сфера расширилась, стали появляться страховые услуги различных видов экономической деятельности, люди разных сфер. Некоторые источники отмечают, что первый письменный договор страхования в Англии был заключен в XIV веке, когда в России в 1827 году впервые было создано общество страхования от пожара, в Италии в 1393 году каждый нотариус в среднем оформлял страховой полис на 80 клиентов в неделю, и, наконец, в 1466 году Венеция приняла Кодекс морского страхования. В юридической литературе можно даже проследить существование точек зрения о том, что работа по кодификации права на страхование в российском государстве началась в 1879 году [2]. Термин "страхование", т.е. "insurance", которое происходит от английского, означает "in" (внутри) и "sure" (надежда, надежный) – "в надежных руках". Это означает, что застрахованный объект надежно защищен, а значит, беспокоиться не о чем.

**Анализ и результаты.** Механизм, который гарантирует защищённость субъектов экономики, в том числе и страховых учреждений, ликвидирует или минимизирует ущерб не только потенциалу данного учреждения, но и экономике страны (региона) в целом. Именно в этом и заключается основная функция обеспечения экономической безопасности субъектов экономики –повышение научного и экономического потенциала.

Существуют группы факторов воздействия внутренней и внешней среды на безопасность организации, каждый из которых может содержать различные виды угроз: экономические, рыночные, политические, криминальные, технологические, конкурентные, социальные, международные и др. [1, с.187].

К основным факторам, влияющим на устойчивость и экономическую безопасность фирмы следует отнести: – размер компании;

– внешние риски;

– сбалансированность страхового портфеля;

– развитость и устойчивость клиентской базы;

– сбалансированность финансовых потоков;

– состояние филиальной сети;

– срок существования компании на рынке;

– деловой потенциал компании.

Для каждой страховой компании используется свой соответствующий комплекс мер и методов, которые подходят как для его внутренней, так и внешней обстановке.

В режиме устойчивого функционирования, страховая организация при решении задач своей экономической безопасности уделяет большое внимание на поддержание нормального ритма функционирования, на предотвращение

материального и/или финансового ущерба, на недопущение незаконного доступа к служебной информации и разрушения компьютерных баз данных, на противодействие недобросовестной конкуренции и другое.

Непрерывное усиление факторов, которые угрожают экономической защищённости страховой организации и обусловливают ее угнетённое развитие, ставит вопрос о создании системы мониторинга состояния и динамики развития компании с целью предупреждения о грозящей опасности и принятия необходимых мер защиты и противодействия.

Существенное значение имеет определение характеристик экономической безопасности страховой организации (индикаторов). От точного распознавания опасностей, от правильного выбора измерителей их проявления, зависит как степень адекватности оценки экономической безопасности компании, отвечающей реальному положению дел, так и корректность обоснования комплекса необходимых мер по предупреждению и устранению опасности, соответствующей масштабу и характеру угроз.

В общем случае для страховой компании концепция количественных и качественных показателей экономической безопасности может содержать в себе следующие индикаторы:

1) индикаторы предоставляемых услуг по страхованию (рейтинговая оценка, оценка конкурентоспособности услуг и другие.);

2) финансовые индикаторы (оценка уровня платежеспособности и финансовой устойчивости организации и другие.);

3) социальные индикаторы (оценка уровня задолженности по зарплате и другие.).

Главными потребителями рейтинговой оценки являются фактические (подлинные) и потенциальные (возможные) страхователи. Поскольку их заинтересованность сконцентрированна на возможности полного и своевременного выполнения компанией своих обязательств по действующим (функционирующим) полисам страхования, а также перспективах исполнения снова появляющихся обязательств с учетом вероятных изменений в экономической среде, в качестве ключевых показателей при установлении уровня надежности рассматриваются два: платежеспособность компании и ее финансовая устойчивость [1, с.187].

Низкий уровень финансовой грамотности также препятствует развитию страхового сектора в Узбекистане. Объем расходов населения на услуги страхования составляет в среднем 5 долл. США на душу населения, что существенно ниже показателей развитых рынков страхования (более 2 000 долл. США) и даже таких развивающихся стран, как Казахстан, Ангола, Кения и Индия (менее 50 долл. США).

Показатели кредитного качества банковского сектора Узбекистана оказывают негативное влияние на показатели качества активов страховых компаний. Базовый уровень рейтинга коммерческих банков, ведущих операционную деятельность только в Узбекистане («Ь+»), является низким в международном контексте. Страховые компании подвержены кредитным и рыночным рискам, связанным с банковским сектором, в который они инвестируют основную часть своих активов.

Наша оценка отраслевого риска узбекистанского сектора общего страхования соответствует аналогичным оценкам для Кении, Анголы и Индии. Вместе с тем рынки общего страхования в этих странах находятся на очень разных этапах развития. Наше мнение об узбекистанском секторе общего страхования учитывает все еще развивающуюся институциональную систему, а также динамику развития отрасли и характеристики страховых продуктов.

Режим регулирования, действующий в отношении узбекистанского страхового сектора, не ограничивает выход новых компаний на рынок. За последние пять лет число компаний, занимающихся общим страхованием, увеличилось с 23 до 28%. Мы отмечаем высокую концентрацию страхового сектора страны: пять крупнейших компаний контролируют 56% рынка общего страхования. По нашему мнению, крупные игроки имеют более узнаваемые бренды и пользуются преимуществами, связанными с большей осведомленностью клиентов об их страховых продуктах, а также с наличием сетей продаж, которыми эти компании эффективно управляют. Мы отмечаем, что на долю государственных страховых компаний приходится 40% подписанной страховой премии-брутто в сегменте общего страхования, хотя эта доля постепенно снижается.

**В заключение,** следовательно необходимо оценивать не только "мгновенный" коэффициент платежеспособности, но и вероятность компании сохранять действующий уровень платежеспособности при возможных внешних и внутренних угрозах, то есть ее финансовую устойчивость. Фактически обязательно должна рассматриваться деятельность компании как некий непредвиденный процесс в качестве показателя, в котором рассматривается ее платежеспособность, и оценивается вероятность того, что траектория данного процесса в условиях внутренних и внешних рисков на конечном интервале не пересечет установленную нижнюю границу допустимого уровня платежеспособности, что может привести к банкротству.

С нашей точки зрения, узбекистанская институциональная система постепенно развивается, но ее качество по-прежнему ниже, чем в ряде стран с развивающейся экономикой и в большинстве развитых стран. Мы по-прежнему негативно оцениваем качество и стандартизацию финансовой отчетности и

раскрытия информации, отмечая ограниченную сопоставимость данных. Вместе с тем мы ожидаем, что новая система регулирования обусловит повышение эффективности регулирования и, возможно, усиление надзора за страховым сектором в среднесрочной перспективе. Страховые компании представляют квартальную отчетность в соответствии с национальными стандартами бухгалтерского учета.

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# BIOGEN ELEMENTLARNING INSON TANASIGA TA’SIRI

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**Annotatsiya.** Ushbu maqola biogen elementlarning inson tanasiga chuqur ta'sirini o'rganib, ushbu muhim elementlar va inson salomatligi o'rtasidagi murakkab o'zaro ta'sirga oydinlik kiritadi. Adabiyotlarni chuqur tahlil qilish orqali ushbu tadqiqot uglerod, kislorod, vodorod, azot, oltingugurt va fosfor kabi asosiy biogen elementlarning rollarini o'rganadi. Amaldagi usullarga tegishli ilmiy adabiyotlarni har tomonlama ko'rib chiqish kiradi. Natijalar ushbu elementlarning fiziologik muvozanatni saqlash va turli biokimyoviy jarayonlarni qo'llab-quvvatlashda muhim ahamiyatini ta'kidlaydi. Muhokama bo'limi biogen elementlarning umumiy farovonlikka ta'sirini o'rganadi va sog'liq uchun potentsial aralashuvlar haqida tushuncha beradi. Xulosa qilib aytganda, maqola keyingi tadqiqotlar yo'llarini taklif qiladi va biogen elementlar va inson salomatligi o'rtasidagi murakkab munosabatlarni tushunishning ahamiyatini ta'kidlaydi.

**Kalit so'zlar:** Biogen elementlar, inson tanasi, uglerod, kislorod, vodorod, azot, oltingugurt, fosfor, adabiyotlarni tahlil qilish, sog'liqqa ta'siri.

## Kirish:

Asosan uglerod, kislorod, vodorod, azot, oltingugurt va fosfordan tashkil topgan biogen elementlar hayotni qo'llab-quvvatlash va inson tanasidagi fiziologik jarayonlarning murakkab muvozanatini saqlashda hal qiluvchi rol o'ynaydi. Ushbu elementlar hujayralar va to'qimalarning to'g'ri ishlashi uchun zarur bo'lgan oqsillar, nuklein kislotalar, lipidlar va uglevodlar kabi biomolekulalarning asosiy qurilish bloklari hisoblanadi. Ushbu biogen elementlarning inson salomatligiga ta'sirini tushunish profilaktika va terapevtik aralashuvlar to'g'risida tushunchalarni rivojlantirish uchun juda muhimdir.

Yer po‘stlog‘ining 98% i, asosan 8 ta element: O, Si, Al, Fe, Ca, Na, K, Mn hisobiga tashkil topganEvolutsiya jarayonida ularning barchasi tirik materiya tarkibiga kirgan bo‘lsa-da, uglerod asosiy hayot elementi bo‘lib qolgan.

O‘simliklarning 99,1% to‘qimalarini O, C, H, Na, K, Ca, Si elementlari tashkil etgan

Inson tanasining 99,4% ini H, O, C, N, Ca tashkil etadi. Ularning barchasi makrobiogen elementlar deb ataladi.

Tirik organizmda 0,01% dan kam miqdorda uchraydigan 10 ta element:

Fe, Mn, Co, Cu, Mo, Zn, F, Br, I, B mikrobiogen elementlar deb ataladi.

Kalsiy odam organizmida muhim ahamiyatga ega bo‘lgan biogen element bo‘lib, organizmdagi barcha kalsiyning 99% i suyakda, taxminan 1% i esa qon va limfada uchraydi.

Marganes — tirik organizmlarda siydik hosil bo‘lishida asosiy elementdir. U, shuningdek, C — vitaminining hosil bo‘lishida ham katta ahamiyatga ega.

Kobalt — gemoglobin sintezida katta ahamiyatga ega, DNK va aminokislotalar almashinuvida muhim element hisoblanadi

Mis — teri pigmentatsiyasida, Fe ning o‘zlashtirilishida katta rol o‘ynaydi.

Rux — organizmda CO2 hosil bo‘lishi va oqsillarni o‘zlashtirilishida muhim ahamiyatga ega. Rux yetishmasligi oqibatida g‘alladoshlar, sabzavotlar va makkajo‘hori kasalliklarga tez chalinadi

Ftor — tirik organizmlar suyak to‘qimalarining hosil bo‘lishi va o‘sishida juda zarur elementlardan biri hisoblanadi

Tishlar ularda ftor miqdori kamayganda nuray boshlaydi

Brom — oliy nerv faoliyatining normal kechishi uchun javob beruvchi elementlardan biri.

Yod — organizmlarning normal o‘sishi, jinsiy yetilishi uchun zarur element.

Keyingi yillarda mikroelementlar qatoriga Li, Al, Ti, V, Cr, Ni, Se, Sr, As, Cd, Sn, Ba, W kabi yangi elementlar kirib keldi

500 000 dan ortiq turdagi o‘simliklardan 300 ga yaqini va milliondan ortiq hayvon turlaridan 200 ga yaqinida mikroelementlarga bo‘lgan ehtiyoj sezilayotganligi endi aniqlangan

**Xulosa:**

Men bu mavzuni olganimdan maqsad biogen elementlar uchrovchi tabiiy mahsulotlarni chuqurroq o’rganish va xalq orasida tabiiy ovqatlanishni yo’lga qo’yish. Inson immun tizimini tabiiy yo’l bilan oshirish

Xulosa qilib aytganda, ushbu maqolada inson tanasidagi biogen elementlarning muhim ahamiyati va ularning hayotni qo'llab-quvvatlashdagi murakkab rollari ta'kidlangan. Ushbu elementlarning o'zaro ta'sirini tushunish profilaktik sog'liqni saqlash strategiyalari va terapevtik aralashuvlar uchun qimmatli tushunchalarni beradi. Oldinga qarab, biogen elementlar darajasini optimallashtiradigan va uzoq muddatli salomatlik va farovonlikni ta'minlaydigan maxsus parhez va turmush tarzi tadbirlarini o'rganish uchun keyingi tadqiqotlar kafolatlanadi. Bundan tashqari, davom etayotgan tadqiqotlar ushbu elementlarning inson fiziologiyasiga ta'sirini ko'rsatadigan molekulyar mexanizmlarni tushuntirishga qaratilishi kerak. Oxir oqibat, biogen elementlarning inson tanasiga ta'sirini har tomonlama tushunish tibbiy bilimlarni oshirish va sog'liqni saqlash natijalarini yaxshilash uchun juda muhimdir.

**Foydalanilgan adabiyotlar**


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# THE STUDY OF IMPORTANT DRUGS IN THE FIELD OF MEDICINE THEIR COMPOSITION AND METHODS OF USE

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**Annotation**: In the field of medicine, the study of important drugs is crucial for understanding their composition and methods of use. Whether you are a healthcare professional, a researcher, or a patient, having a comprehensive understanding of the drugs you use or prescribe can lead to more effective treatments and better health outcomes.

**Key words:** Herbal medicine,natural remedies , plant-based medicine,traditional medicine,healing properties of herbs, medicinal plants,therapeutic effects of herbs, medical plants,herbal formulation,botanical medicine

## Composition of Important Drugs

The composition of important drugs varies widely and is tailored to their specific therapeutic purposes. For instance, antibiotics such as penicillin and amoxicillin belong to the beta-lactam class and work by disrupting the formation of bacterial cell walls. Painkillers, including acetaminophen, ibuprofen, and naproxen, exert their effects by inhibiting the production of prostaglandins, which are responsible for pain and inflammation.

Antidepressants, such as selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants, modulate neurotransmitter levels in the brain to alleviate

symptoms of depression and anxiety. Each class of drugs has its own unique composition and mechanism of action, which is critical in understanding their clinical effects and potential side effects.

The world of modern medicine is replete with a vast array of essential drugs that play crucial roles in treating various medical conditions. From antibiotics that combat

bacterial infections to painkillers that alleviate discomfort, these medications are indispensable in healthcare. Understanding the composition and methods of use of these important drugs is essential for both medical professionals and the general public, as it empowers individuals to make informed decisions about their healthcare.

The composition of a drug refers to the active ingredients that make up the medication, as well as any inactive substances used in its formulation. Understanding the composition of a drug is essential for several reasons. First, it allows healthcare professionals to assess the potential risks and benefits of the medication before prescribing it to a patient. For example, knowing the active ingredients and their mechanisms of action can help determine if a drug is suitable for a specific condition or if it may interact with other medications a patient is taking. Additionally, understanding the inactive ingredients can be important for patients with allergies or sensitivities to certain substances.

Moreover, studying the methods of use of important drugs is essential for ensuring their safe and effective administration. This includes understanding the appropriate dosage, route of administration, frequency of use, and any special instructions or precautions that need to be followed. For example, some drugs may need to be taken with food to enhance their absorption, while others may need to be avoided with certain beverages or other medications to prevent interactions.

One example of an important drug whose composition and methods of use are widely studied is aspirin. Aspirin, also known as acetylsalicylic acid, is a common over-the-counter medication used for pain relief, fever reduction, and anti-

inflammatory purposes. Its active ingredient, salicylic acid, works by inhibiting the production of prostaglandins, which are substances in the body that cause pain and inflammation. Understanding this mechanism of action allows healthcare professionals to determine the appropriate uses and dosages of aspirin for different conditions. In addition, understanding the methods of use of aspirin is important for ensuring its safe and effective administration. For example, it is generally recommended to take aspirin with a full glass of water and to avoid lying down for at least 10 minutes after taking it to prevent irritation of the esophagus. Furthermore, aspirin should not be given to children or adolescents with fever or flu-like symptoms due to the risk of Reye's syndrome, a rare but serious illness.

Methods of Use

The methods of use for important drugs encompass various aspects, including dosage, administration routes, and potential interactions. Dosage forms of drugs may include tablets, capsules, syrups, injections, and topical preparations, each of which has specific instructions for use. It is vital for individuals to adhere to prescribed dosages and frequencies to ensure the efficacy and safety of the medications. The route of administration also plays a pivotal role; for example, some drugs are intended for oral ingestion, while others require intravenous, intramuscular, or transdermal administration.

Furthermore, understanding potential drug interactions is crucial to avoid adverse effects. Certain drugs may interact with food, beverages, or other medications, leading to reduced efficacy or increased toxicity. Moreover, the duration of drug therapy is a critical consideration, as some medications are intended for short-term use, while others are prescribed for long-term management of chronic conditions. Patient education regarding the methods of use is vital to optimize treatment outcomes and minimize the risk of medication errors or non-adherence.

In conclusion, the study of the composition and methods of use of important drugs is crucial for ensuring their safe and effective use. Whether you are a healthcare professional, a researcher, or a patient, having a comprehensive understanding of the

drugs you use or prescribe can lead to better health outcomes. By understanding the active and inactive ingredients, mechanisms of action, appropriate uses, and potential risks and benefits of important drugs, we can make informed decisions about their use and contribute to better healthcare practices.

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