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Section 1. Machinery construction

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MAIN FEATURES OF REED SWITCHES

Abstract. Magnetic-operated sealed contacts (MC) are a wide category of electromechanical devices, in which the closing or opening of an electrical circuit is carried out by contacts made of ferromagnetic materials, powered by magnetic field, and the contacts themselves are placed in a hermetically sealed cylinder. Over the years, Ellwood's development of the design, which received the name of the reed MC, offered a number of other designs: plunger, ball, rotary, membrane, valve-petal MC and ferrites. In turn, some of these types of MCs can be performed with mercury wetted or analogized by contact surfaces. Despite the common name (MC), each of these types has distinctive features that prevent detailed analysis of electromechanical parameters of the whole group.

Keywords: schematic diagrams, metal-dielectric-semiconductor, analysis, synthesis.

Magnetic-operated sealed contacts (MC) are a wide category of electromechanical devices, in which the closing or opening of an electrical circuit is carried out by contacts made of ferromagnetic materials, powered by magnetic field, and the contacts themselves are placed in a hermetically sealed cylinder. Over the years, Ellwood's development of the design, which received the name of the reed MC, offered a number of other designs: plunger, ball, rotary, membrane, valve-petal MC and ferrites. In turn, some of these types of MCs can be performed with mercury wetted or analogized by contact surfaces. Despite the common name (MC), each of these types has distinctive features that prevent detailed analysis of electromechanical parameters of the whole group.

The most widespread are reed MCs, whose production technology is most simple and suitable for full automation of their production process. By the present time reed MCs with different dimensions, configurations of parts and magnetic circuit have been developed and are produced in mass circulation. They allow building on their basis a wide class of switches for automated control system (ACS), digital calculating machine (DCM), systems and

home appliance. Such essential drawbacks of non-moistened or dry reed MCs, as presence of vibration of details of contact pair after the first short circuit and rather low switching ability, can be considerably eliminated by wetting of mercury of contact surfaces or their analogizing. Therefore, the production of reed MCs and the number of design variants is continuously increasing, which has necessitated their classification. The number of classification features is quite high; it can serve as an explanation for the relatively large number of contacts and author's certificates on the reed MC designs. One of the possible variants of breakdown of constructions by their stable features is presented, which include the type of magnetic circuit of MC, orientation of the control magnetic field with respect to MC axis, type and number of contact groups, contact details material and MC dimensions. Let us consider the designs of reed contact details of MCs. As mentioned above, these designs are also very diverse.

The traction characteristics of the reed switch element control.

In the reed contact operation the main control factor is the magnetic flux F, which can be created by the following methods.

1. Current flow through the control winding (or through several windings) on the reed cylinder.

2. The proximity of a permanent magnet or ferromagnetic material to the reed.

3. Approximation of the control winding with current to the reed.

4. Complex use of the above methods.

Let us consider the most popular, the first method of creating magnetic flux by excitation of the control winding of the reed.

By passing current through the control winding of the reed, an axial magnetic field is created which penetrates into the reeds and magnetizes them. In this case, the magnetic power lines are closed mainly in the reeds, as the magnetic permeability of the material of the reeds is quite high compared with the magnetic permeability of other areas. Partially the power lines are also closed in the area of the overlap. Consequently, the full magnetic flux F consists of two components: a useful magnetic flux – F_3, flowing between the reeds in the area of overlap (in the gap) and contributing to the emergence of force of attraction between the reeds; and a magnetic scattering flux – F_s, flowing from one reed to another outside the area of overlap and thus not involved in the creation of the pull force.

When excited by the reed switch, depicted on each reed (until the contact of the reeds) in the statics act two forces: the force of magnetic attraction F and the restoring force F_y.

It is known that the force of magnetic attraction F between the reeds in the first approximation (in the approximation of a homogeneous field) is determined by Maxwell's law by the following expression:

$$\frac{F_{a^2}}{8\Pi \cdot a \cdot b}$$

Where a – is the length of the overlap area;

b – is the width of the reeds.

More precisely, the force of magnetic attraction generally depends on the large gap X – between the reeds in the pulling process, the thickness of the reeds h, the length of the reeds l and the ratio of magnetic permeability of the environment and the reed material. These dependencies were investigated by Peak. It noted that the length of the overlap area is much smaller than the length of the reeds (d, l) and then the magnetic attraction force depends slightly on the reed length. And besides, since the magnetic permeability of M material of the reed is quite high (for an iron-nickel alloy with 50% nickel content of $M=1000+5000$), the force of attraction F depends only on the magnetic flux F_3, the distance between the reed X, width b and thickness h of the reeds:

$$F = F\left(F_3 \, \frac{x}{d} \cdot \frac{d}{b} \cdot \frac{h}{b} \right) \qquad (2)$$

Peak was found that for reed switches with selected relative dimensions, this experimental dependence of the force of attraction on the gap at a constant magnetic excitation, called in the theory of

switching elements of traction characteristic, has the following form:

$$F = \frac{F_0}{1+C_x} \qquad (3)$$

Where F_0 – is the highest force at a given excitation for fully stretched reeds;

C – The coefficient constant for these reeds depends on the ratio of reed size and the value of overlap:

$$C = f\left(\frac{h}{b} \cdot d\right) \qquad (4)$$

The force of magnetic attraction is counteracted by the restoring force of the F_y reed,

Which depends on the deflection value of the end of each Y reed:

$$Y = \frac{X - x}{2} \qquad (5)$$

The restoring force dependence of F_y or $Y = \frac{X-x}{2}$ called the mechanical characteristic of the reed, is approximately linear:

$$F_y = S\left(\frac{X-x}{2}\right) = S \cdot Y \qquad (6)$$

And the coefficient of proportionality S is called reed stiffness and is determined experimentally or by calculating the elasticity characteristics of the reed material.

The restoring force F_y is maximal when the reeds are tightened ($x = 0$).

$$F_{Y_0} = S \cdot \frac{x}{2} \qquad (7)$$

Of greatest interest is the traction characteristic corresponding to the smallest magnetic excitation, which forms a contact

$$F = \frac{F_0{'}}{1+C_x} \qquad (8)$$

Where $F_0{'}$ is the corresponding force of attraction for fully stretched reeds.

With this minimum contracting excitation, the contact pressure force is equal to the difference +

$$F_k^{'} = F_0^{'} - S \cdot \frac{x}{2} \qquad (9)$$

In order to form a reliable contact and obtain a stable contact resistance, it is necessary to have sufficient contact pressure. This, on the one hand, makes it advantageous to use the excitation with more intensive fields than the minimum required, which will correspond to the attraction forces $F_0^2 > F_0^1$.

The contact pressure: $F_k^2 = F_0^2 - S \cdot \frac{x}{2}$ increases.

On the other hand, an increase in contact pressure can be obtained by reducing the system elasticity. However, the latter pathway is usually not used, as there is a risk of contact sticking. When calculating a reed, it is sought that the ratio of elasticity to contact pressure force exceeds some value n (of the order of one). This limits the necessary magnetic excitation value from below, or that the same force F_0^2.

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Section 2. Medical science

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IMMUNOHISTOCHEMICAL DIAGNOSTICS OF PD-L1 AND COX-2 RECEPTORS IN CERVICAL NEOPLASIA: POSSIBILITIES OF A DIFFERENTIATED APPROACH

Abstract. Despite the actively applied screening and certain successes in the diagnosis and treatment of cervical cancer (CC), the morbidity in many regions of the world remains high. The widespread use of a whole range of diagnostic procedures, among which cytological examination of the cervical smear remains the leading one, allowed significantly reducing the incidence in developed countries.However, it is still impossible to discuss the stabilization of the increase, especially if we take into account that more than 80% of cervical cancer cases occur in developing countries, where targeted screening isabsent or poorly organized [1]. Thus, the use of screening in the United States has led to more than 50% reduction in mortality from cervical cancer, and the annual increase in morbidity is about 0.7%. In the Russian Federation, the 10-year increase in morbidity is 24.28%, and the increase in cervical cancer cases in young women under the age of 29 for the same period is about 150%; in the UK, over the past 10 years, a tendency for an increase (about 4%)in age-specific morbidity has been observed [2]. The above data indicate the existence of shortcomings in the program for early diagnosis of cervical cancer and the need to study the possibilities of its expansion. Colposcopy, cytological examination and biopsy of the cervix allow identifying high-risk groups requiring surgical intervention and subsequent postoperative observation [3]. Although the principles of observation for negative results have beencompletelyestablished, clear instructionshave not been formulated in the high-risk groups (CIN II and CIN III), and in each case, they are based on clinical data and the results of a histological examination [4]. In most developed countries, along with the cytological method, testing for human papillomavirus infection (PCR test, Digene-test)is also widely used. Detection of the viral genome is an indicator of a high risk of recurrence of CIN II and III, but it is necessary to consider the possibility of transient or persistent virus carriage, especially in young women, which can be the cause of overdiagnosis [5]. The lack of specific prognostic criteria for each type of dysplasia complicates the risk assessment and individual approach to patients. In

this regard, the immunohistochemical determination of the expression level of PD-L1 and COX-2 receptors in cervical biopsies seems to be an interesting and promising direction. The PD-L1 ligand contacting with its PD-1 receptor (a protein found on the surface of immunocompetent cells, mainly T-lymphocytes), triggers the mechanism of suppression of a tumor-oriented immune response by inducing anergy and apoptosis of T-lymphocytes. Suppression of the immune response in dysplasias against the background of active HPV infectionis apparently important in the progression of the disease and malignant transformation of the cervical epithelium [6]. The transition from dysplasia to cancer is a rather long and multi-step process, the speed of which depends on many accompanying factors.Some of the main factors are the degree of epithelial atypia, the age of the patient and the presence of papillomavirus. The HPV infection is known to be accompanied by long-term chronic inflammation that provokes carcinogenesis [7]. From this point of view, the determination of the activity of COX-2, which is one of the main modulators of chronic inflammation, in the dysplastic epithelium, can serve as a prognostic indicator of the development of cervical cancer.

Keywords: cervical cancer, cervical intraepithelial neoplasia, cyclooxygenase-2, programmed death-ligand 1.

Purpose of the study. Determination of PD-L1 and COX-2 expression in cervical intraepithelial neoplasias of varying severity.

Materials and methods. An immunohistochemical study of PD-L1 and COX-2 expression was performed in cervical biopsies of 35 patients with CINI, II and III. A standardimmunohistochemical (IHC) processing regimen (VENTANA Bench Mark Ultra) with rabbit monoclonal antibodies to COX-2 (SP21) and PD-L1 (VD21R) (from Medaysis company) was used. The expression level of PD-L1 was assessed by the number of cells tropic to antibodies andthe result was considered negative when staining was less than 1.0% of the general population, and it was positive when staining was more than 1.0%. Based on the level of COX-2 expression in the squamous epithelium, four groups with cytoplasmic staining were identified: 0 (negative reaction), 1+ (weak expression level), 2+ (medium expression level), and 3+ (pronounced expression level). Statistical processing of the results was carried out by using of parametric and nonparametric methods. Microsoft Excel and Statisticafor Windows v.10.0 were usedfor the digital data processing. The difference was considered significant with a confidence level of at least 95% ($p < 0.05$)

Results

All patients underwent clinical and instrumental examination in a standard volume -gynecological examination, cytological examination of cervical smear, colposcopy, biopsy. The age of the patients ranged from 28 to 61 years. The average age of women was 37.3 years. The majority of cases (32 cases) of cervical dysplasia (CSD) were found among women aged 28–49 years, which is91.4%of all cases. A significant part was women aged from28 to 39 years – 20 women, 57.1%.

One case of CC decease was observed in each group aged 50–59 and 60–69 years. Three (8.6%) patients were in menopause, two (5.7%) were premenopausal and thirty (85.7%) were actively menstruating. A preventive examination or control over existing gynecological problems (uterine fibroids, colpitis, cervicitis, erosion, menstrual irregularities, ovarian cysts, etc.) revealed the disease in 88.6% of the women (31 cases), who did not present any complaints. The interpretation of the cytological study results was carried out according to the Bethesda system.ASC-US was found in

two (5.7%), ASC-H – in three (8.6%), LSIL – in four (11.4%) and HSIL – in 26 (74.3%) cases. All patients underwent colposcopy, which revealed areas of white epithelium (19 cases), iodine negative areas (21 cases), mosaic and puncture (5), pathological transformation zone (22 cases), tortuous vessels (9 cases). According to the histological data, seven (20.0%) women were diagnosed with CIN I, thirteenwith CIN II (37.1%), and fifteen (42.9%) with CIN III. The results of immunohistochemical detection of COX-2 receptor status in tissue material are presented in (Table 1).

Table 1. – COX-2 expression level in CIN of varying severity

Expression level	CIN I	CIN II	CIN III	Total
COX-2 (1+)	5(14.3%)	2(5.7%)	–	7(20.0%)
COX-2 (2+)	2(5.7%)	9(25.7%)	5(14.3%)	16(45.7%)
COX-2 (3+)	–	2(5.7%)	10(28.6%)	12(34.3%)
Total	7(20.0%)	13(37.1%)	15(42.9%)	35(100%)

As seen in (Table 1), weak staining was observed in five (14.3%) cases, and moderate staining in two cases (5.7%) out of seven in the subgroup with CINI. No pronounced staining (3+) was found, (p < 0.05). The subgroup with CINII was dominated by patients with a moderate COX-2 response. In nine cases out of thirteen, the expression of COX-2 (1+) and COX-2 (3+) was observed in four women, two in each case, which amounted to 25%, 7%, 5.7% and 5.7% of the total number of patients with dysplasia, (p < 0.05). In the subgroup with CINIII, in ten patients (28.6%), the severity of the COX-2 reaction corresponded to 3+ and in five patients (14.3%) to 2+, (p < 0.05).

Weak (1+) COX-2 staining occurred in seven (20.0%) cases, five (14.3%) of them were in the CINI group and two (5.7%) in the CINII group, (p < 0.05). Moderate (2+) staining was detected in sixteen (45.7%) women, of which two cases (5.7%) were in the group with CINI, nine (25.7%) with CINII and five (14.3%) in the group with CINIII. The 3+ (pronounced) reaction was found in twelve (34.3%) women, ten (28.6%) of them had CINIII and two (5.7%) had CINII, (p < 0.05). PD-L1 positivity (Table 2) was revealed in fifteen (42.9%) cases with cervical dysplasia. A positive reaction was detected in eleven (31.4%) cases with CINIII and four (11.4%) cases with CINII, p < 0.05. No staining was observed in the CINI patients, thus, all CINI cases were PD-L1 negative. PD-L1-negative was nine (25.7%) patients and only four (11.4%) of the thirteen women diagnosed with CINII were PD-L1-positive, (p < 0.05). A somewhat different picture was observed in patient with cervical dysplasia III degree. In this group, intensive staining was observed in eleven of fifteen patients (31.4%), PD-L1-negative reaction was observed in four (11.4%) patients.

Table 2. – Level of PD-L1 expression in CIN of varying severity

Expression level	CIN I	CIN II	CIN III	Total
PD-L1 negative	7(20.0%)	9(25.7%)	4(11.4%)	20(57.1%)
PD-L1 positive	–	4(11.4%)	11(31.4%)	15(42.9%)
Total	7(20.0%)	13(37.1%)	15(42.9%)	35(100%)

Discussion

The analysis of the data obtained allows us to state the fact of COX-2 and PD-L1 receptors, expression difference depending on the depth of cervical dysplasia. CIN I is characterized by the absence of a response to PD-L1 and a predominantly weak response to COX-2 (14.3% versus 5.7% of moderate staining, p < 0.05), while COX-2 (3+) cells were not detected. Among women with CIN II, 25.7% moderate degree of COX-2 (2+) stain-

ing and PD-L1-negative variants prevailed in each case, (p < 0.05). In the group of patients with CIN III, PD-L1-positive variants (31.4%, p < 0.05) and cases with a pronounced (3+) response to COX-2, 28.6% (p < 0.05) prevailed.

Thus, as dysplasia progresses, an increase in the density of COX-2 and PD-L1 receptors, and as a consequence, higher intensity of immunohistochemical staining is observed. Weak (1+) response to COX-2 and its absence for PD-L1 in CIN I are essential facts, which confirm the low malignancy risk of this type of dysplasia. High (3+) response to COX-2 observed in CIN III and the predominance of PD-L1-positive forms among them can serve as an effective predictive criterion for malignant transformation and facilitate the selection of patients with a high risk of cervical cancer. Further researcher in this direction may be promising and therefore, we consider conducting an immunohistochemical reaction for COX-2 and PD-L1 as expedient when CIN II and CIN III are detected in women.

Summary

The main directions in the fight against cervical cancer are early detection and adequate treatment of cervical dysplasia. The prognostic criterion in this case is the histological characteristics of the epithelium, based on which the therapeutic tactics and observation of patients are planned. To date, there are no recommendations on the molecular and biological properties of the cellular structures of the cervical dysplasia, which would allow the qualitative and quantitative assessmentof the degree of cervical cancer risk. The article discusses the possibilities of immunohistochemical determination of the expression of COX-2 and PD-L1 receptors in cervical intraepithelial neoplasias, depending on the degree of their histological malignancy. Based on the presented data, high expression of COX-2 and PD-L1 receptors in CINIII, as well as a weakw or negative reaction in CINI occurred. The results obtained will allow to use a differentiated approach to patients with CIN and revealing a high-risk group among patients with CINII and CINIII.
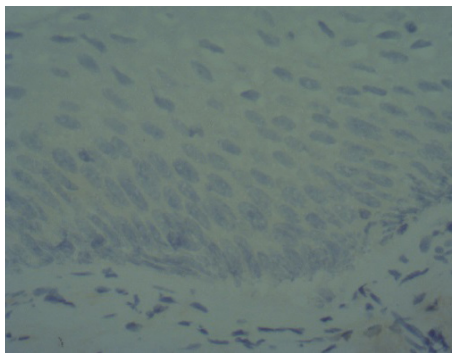
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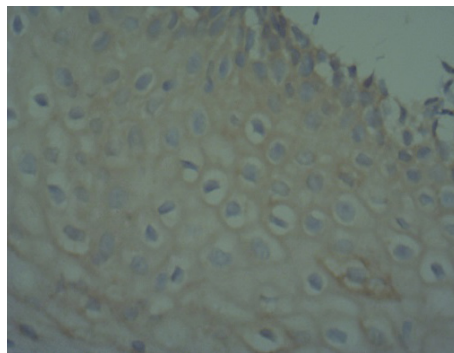
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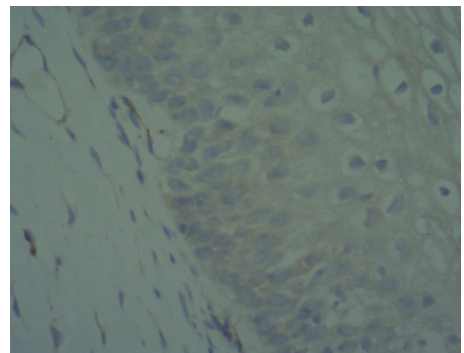
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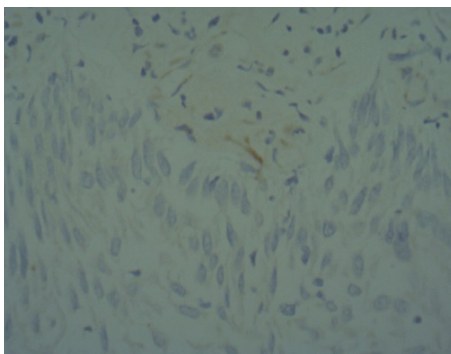
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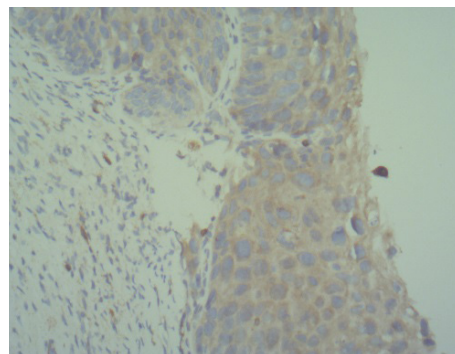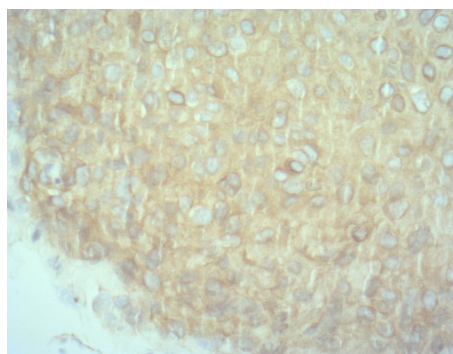
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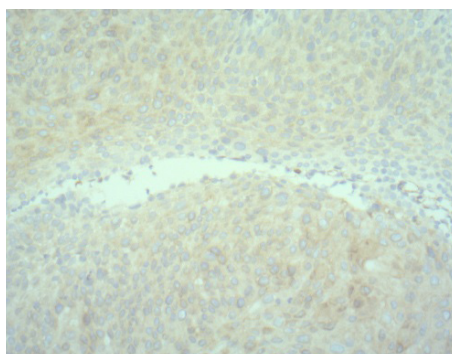
| CIN II COX-2 3+ | CIN III COX-2 2+ | CIN II COX-2 2+ |

| CIN II PD-L1 pozitiv | CIN II PD-L1 negativ | CIN III PD-L1 negativ |
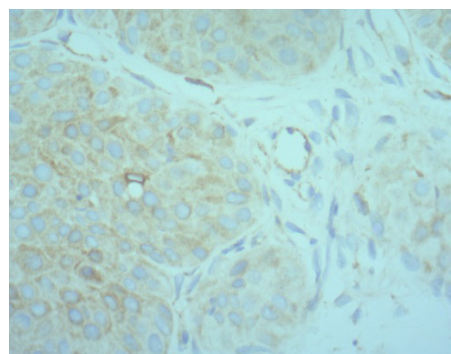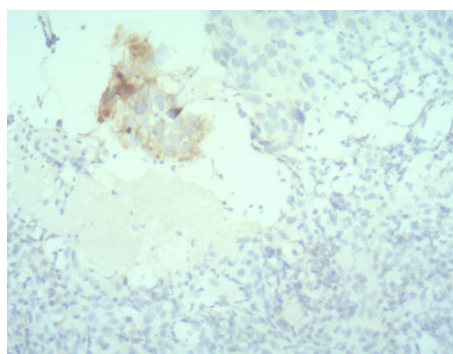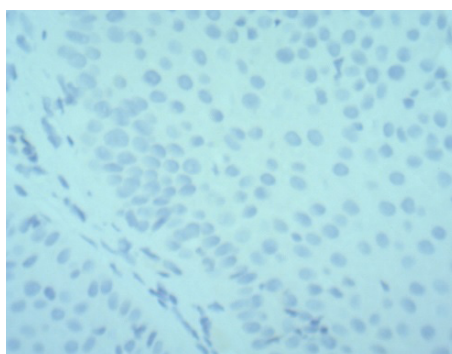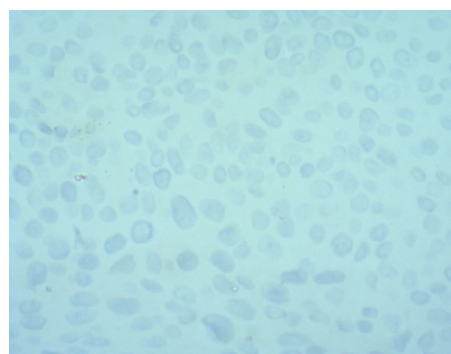
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EFFECT OF PLANTING DATE ON PRODUCTIVITY OF MAIZE (*ZEA MAYS L. SSP.*) IN SOUTHERN KAZAKHSTAN

Abstract. Abstract. Kazakhstan's 16 million population occupy a land area of 2.7 million square kilometers, which is 70% of the land of Central Asia, but only 30% of the total population of the region. About 15 M ha of Kazakhstan's land area is used for crop production. The national average maize yield is about 4.6 tons ha-1, while potential exists for increasing the yield to over 8 tons ha-1 through increased use of improved hybrids or varieties, fertilizers and good crop husbandry including optimum planting date. The main objective of this experiment was to study different planting date in the irrigated conditions of South Kazakhstan province. Taking this into account field experiment was conducted in 2018-2019 year, in Chymkent province of Kazakhstan. A randomized complete block design with four replications was established to study yield potential and economics of improved fodder production. The experimental data analysis was performed using GenStat program 17th edition. Four planting dates April 15, April 30, May 15 and May 30 were evaluated to study maize biomass ad grain yield including other agronomic traits. The planting date analysis showed that the best sowing date was April 30, and biomass and grain yields of other three dates were relatively lower. The results of this study show that planting dates have significant effects on number of plants, biomass and grain yield in maize.

Keywords: Maize, planting date, seed germination, plant height, grain and biomass yield.

Introduction

Kazakhstan's 16 million population occupy a land area of 2.7 million square kilometers, which is 70% of the land of Central Asia, but only 30% of the total population of the region. About 15 M ha of Kazakhstan's land area is used for crop production. Kazakhstan can be subdivided into three geographical locations: the south, where most irrigated agriculture is undertaken; the north, which is suited for rainfed farming and livestock production; and the wide central region, which is semi-desert steppe suitable mainly for extensive grazing. Traditionally, agriculture in south Kazakhstan (SK) is dominated by mid-size and small farms. Agricultural production is based on irrigated farming. Wheat, barley alfalfa A significant part of the cropping area is located in the area of insufficient water supply. Therefore, improving agricultural production in irrigated areas through water-saving technologies is critical for achieving sustainable economic development of the region. Maize grain production is amounted to 462.000 tonnes while total area is 95600 hectares in Kazakhstan (FAO [7]). The national average maize yield is about 4.6 tons ha-1, while potential exists for increasing the yield to over 8 tons ha-1 through increased use of improved hybrids or varieties, fertilizers and good crop husbandry including optimum planting date. Low maize productivity is associated with several constraints, including water shortage during the vegetation period, land degradation, biotic and abiotic stresses, and uncertain planting dates. Successful corn production requires an understanding of the various management practices and environmental conditions affecting crop performance. Planting date, seeding rates, hybrid selection, tillage, fertilization, and pest control all influence corn yield in the irrigated conditions. Olson and Sander [10] found that crop management practices such planting date, N fertilizer rate, hybrid maturity selection and harvest timing can affect grain yield, moisture and test weight. The keys to developing a successful production system are to recognize and understand the types of interactions that occur among production factors, as well as various yield limiting factors, and to develop management systems that maximize the beneficial aspect of each interaction in the irrigated conditions of South Kazakhstan. Knowledge of corn growth and development is also essential to use cultural practices more efficiently to obtain higher yields and profits. A. N. Silantev [13] reported the positive effect of early planting on maize grain and biomass yield. Early planting generally produces shorter plants with better standability while delayed planting increases the risk of frost damage to corn and may subject the crop to greater injury from various late insect and disease pest problems, such as *Ustilago maydis* and some other diseases in the irrigated conditions of South Kazakhstan (Sydyk et al. [5]). The main objective of this study is to determine optimum planting date in the irrigated conditions of South Kazakhstan province.

Soil characterization and climate

The soils are sirozem, gray-brown, brown desert, takyr-like, and in the irrigated area -meadow-marshy, mostly saline with salt amount of 33 to 325 t/ha in 2 m layer and humus content of 0.5 to 2.5% in the cultivated layer. The soil of experimental site is rather dense with the bulk density fluctuating between 1.4 and 1.6 g/cm^3. The highest bulk density was noted in the depth of 20–40 cm. All soil parameters were analyzed by the method developed in Uzbek Research Institute of Cotton (UzRIC [14]). Over the past 12 years, more than 50% of fields in the whole Arys district have been ranked as low to very low in P_2O_5. Almost all the areas of the project pilot site are located in hunger desert zones.

Climatic conditions of SK are very diverse, comprising steppes, hot and dry semi-deserts, and mountains.. The climate is continental, with hot temperatures and low air humidity in summer time and cold and quiet unstable winter with low snow fall. Average frost-free period lasts for about 225 days. Average daily temperature is 16.9 °C. A long term annual precipitation level is around 350 mm. However, rainfall varies strongly over the year. Precipitation starts to fall at the end of September and early October. The highest pre-

cipitation falls in winter and spring seasons (78%) followed by autumn (18%) and summer (4%). Low precipitation level permits only irrigated crop production.

Research methods

Availability of earlier hybrids with shorter plants, lower leaf number, upright leaves, smaller tassels and reduced anthesis silking interval has enhanced the ability of maize to withstand high plant populations without showing excessive barrenness (Sangoi [11]. Newly improved maize early maturing hybrid Uzbekistan-601 from Uzbekistan research station of maize was brought and was planted at two household fields on four different planting dates. Experiments were conducted under irrigated conditions in 2018 and 2019 to determine the optimum combination of planting date to maximize the yield of maize. A randomizedcomplete block design with four replicationswas established to study yield potential and economics of improved fodder production. Four planting dates (April 15, repeated every 15 days until May 30) were evaluated for maize biomass yield with its agronomic traits. Seed was placed with 6 cm of soil cover in all treatments. Considering the importance of nitrogen (N), phosphorus (P), and potassium (K), recommended fertilizer rate was held constant for all treatments each year and the fertilizer rate was $N_{180}P_{90}K_{60}$. The maize field was irrigated three times during the vegetation period at the rates 600 m^3. Field data for both experiments were collected on seed germination, plant density, plant height, days to maturity, grain and biomass yield. We determined number of plants per m-2 at the stage of plant maturity. The experimental data analysis was performed using GenStat program 17th edition.

Results

Corn seed begins germination when the seed contains at least 25–30% moisture. Adequate soil mois-ture is most important feature to get rapid, uniform germination and emergence of maize and help set the stage for maximum grain yield at the end of the season. The data in Table 1 indicated that seed germination of maize was significantly (< 0.001) affected by years with highest seed germination of 82.6% obtained in farmer 2, when the crop was sown on May 30 in 2009. Lowest seed germination of 64.9% was noted, in farmer 1, with planting on 15 April in 2008. In our experiment four planting dates showed a relatively small trend of seed germination. The seed germination ranged from 64.9 to 82.6% across treatments, farms and years. At planting date on 30 May, the seed germination increased up to 27% during the vegetation period. Farms not differed significantly (0.004) for seed germination.

Number of plants per m^2 is the most important agronomic trait to determine maize biomass and grain yield. Number of plants was significantly affected by treatment i.e. planting dates while year and farm were not significant (table 2). The highest number of plants per m2 was 9.35 in farm 1 in the treatment where maize was sown on April 30, 2018. The lowest number of plants was recorded (6.55) also in farm 2 where maize was planted on 30 May, 2019. Number of plants per m^2 ranged from 6.55 to 9.35 across the years and treatments.

On the basis of our experiment it was found that the maize crop grew the tallest (291 cm) and a high biomass yield when the plant is planted on May 15 (Table 2). The results revealed that plant height is an important variety trait and late sowing date reduced plant height. ANOVA statistics show that there were significant differences in maize plant height within years, treatments and farms (< 0.001). There was also close interaction between year and treatment on maize plant height while there was not interaction between year and farm, farm and treatment (Table 1).

Table 1. – Analysis of variance of maize plant height

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
1	*2*	*3*	*4*	*5*	*6*
Year	1	32861.4	32861.4	101.63	< 0.001

1	2	3	4	5	6
Farm	1	4009.7	4009.7	12.4	< 0.001
T	3	18583.4	6194.5	19.16	< 0.001
Year.Farm	1	326.6	326.6	1.01	0.32
Year.T	3	8405.3	2801.8	8.67	< 0.001
Farm.T	3	470.3	156.8	0.48	0.694
Year.Farm.T	3	510.2	170.1	0.53	0.667
Residual	48	15520.2	323.3		
Total	63	80687.2			

Remarks: d.f – Degree of freedom; m.s – means square; v.r – variance ratio; F – F-test statistic

Results showed that planting dates effects on biomass yield were significant (Table 3). Biomass yield decreased with subsequently delays sowing. Dale and Drennan (1997) reported final biomass yields were consistently higher with early planting. The result is in line with our results. The highest biomass yield of 15.6 tons ha-1 was recorded with planting date on April 30, while the lowest biomass yield of 6.4 tons ha-1 was obtained with late sowing (May 30). Number of plants per m-2 had significant (< 0.001) effect on biomass yield as biomass yield increased progressively with successive increase in number of plants. Biomass yield (13,5 t ha –1) was highest at a density of 8.8 plants m-2 with sowing on April 30, whereas lowest biomass yield (6.4 t ha –1) was found at a density of 6.55 plants m-2 with 30 May planting. Megyes et al. (1999) also reported significant biomass yield reduction at lowest plant density. Analysis of variance showed the reported biomass yield had significant difference within treatments (< 0.001) while number of plants within farms was unrelated to biomass yield (Table 3).

Table 2. – Seed germination, plant density and height of maize at the experimental in South Kazakhstan

Farm	Treatment	Seed germination,%			Number of plants, m²			Plant height, cm		
		2018	2019	Average	2018	2019	Average	2018	2019	Average
F1	15-Aprl	77.8	64.9	71.3	8.60	7.58	8.09	230.0	283.8	257
	30-April	72.8	69.5	71.2	9.35	8.25	8.80	238.5	284.2	261
	15-May	74.3	66.6	70.5	8.75	7.72	8.24	257.1	325.5	291
	30-May	78.5	65.5	72.0	7.07	7.08	7.08	242.5	237.8	240
F2	15-Aprl	74.8	74.8	74.8	8.19	8.20	8.20	210.7	260.5	236
	30-April	70.0	78.6	74.3	8.90	8.92	8.91	218.4	269.8	244
	15-May	71.5	71.7	71.6	8.33	8.34	8.34	235.4	311.3	273
	30-May	75.5	82.6	79.1	7.43	6.55	6.99	222.1	244.5	233
ANOVA	Year	< 0.001			0.083			< 0.001		
	Farm	0.004			0.715			< 0.001		
	Treatment	0.229			< 0.001			< 0.001		

Grain yield is obviously one of the most important factors to determine total production of maize. Results on grain yield (Table 3) revealed that planting date April 30 in farm 1 and farm 2 gave highest grain yield at a density of 8.80 and 8.91 m-2, respectively. The 2008 and 2009 growing conditions for maize

in South Kazakhstan were, in general, very favorable with near (2018) and above average(2019) rainfall. Low climatic and disease pressureresulting in higher grain yields in 2018 compared to 2019. P. Thomison et al, 2009 reported that excessive rainfall may cause serious injury to a corn crop depending on its stage of development and decrease productivity. Grain yield was lowest for planting date 30 May at a density of 7.08 plants m –2. Grain yield was highest with April 30 planting (Table 3). Yield reduction was associated with planting dates. High yields can thus be obtained by planting date. The results revealed that grain yield was decreased by 2.0 and 0.7 t ha-1, with early and late planting.

Table 3.– Biomass and grain yield of maize (2018–2019)

Farms	Treatment	Biomass yield, t/ha			Grain Yield, t/ha		
		2018	2019	Mean	2018	2109	Mean
Farm 1	15-Aprl	11.8	8.3	10.0	4.4	3.9	4.2
	30-Aprl	15.6	11.5	13.5	7.4	4.9	6.2
	15-May	14.5	12.4	13.5	6.0	5.0	5.5
	30-May	12.9	7.4	10.2	5.7	4.8	5.2
Farm 2	15-Aprl	9.5	7.3	8.4	4.7	3.6	4.1
	30-Aprl	12.5	10.3	11.4	6.8	4.6	5.7
	15-May	12.8	9.4	11.1	5.1	4.7	4.9
	30-May	11.8	6.4	9.1	4.1	3.3	3.7
ANOVA	Farm	<0.001			<0.001		
	Year	<0.001			<0.001		
	T	<0.001			<0.001		

Discussion

Decrease of 8 and 40% in grain yield under early and late sowing, respectively might be due to lower nutrient uptake and reduced photosynthetic translocation in the developing grain. It is therefore, evident that April 30 is optimum planting time for maize grain production in South Kazakhstan province. These results are in line with Fakorede [6] who also reported a decrease of 30–38 kg ha-1 in maize grain yield for each day of delayed sowing. Ahmad et al. [1] concluded that delayed sowing decreased shelling percentage, which ultimately resulted in lower grain yield. Highest grain yield with optimum planting time has been reported by Martiniello [8] and Albus et al. [2]. Mc Williams D. A. [9] reported positive effect of planting date on maize yield. This is in line with our results. The planting date analysis showed that the best sowing date was April 30, and biomass and grain yields of other three dates were relatively lower (Table 3).

Conclusion. In our experiment four planting dates showed a relatively small trend of seed germination. The seed germination ranged from 64.9 to 82.6% across treatments, farms and years.

Number of plants was significantly affected by treatment i.e. planting dates while year and farm were not significant.

On the basis of our experiment it was found that the maize crop grew the tallest (291 cm) and a high biomass yield when the plant is planted on May 15. ANOVA statistics show that there were significant differences in maize plant height within years, treatments and farms (< 0.001). There was also close interaction between year and treatment on maize plant height.

Results showed that planting dates effects on biomass yield were significant (Table 2). Biomass yield decreased with subsequently delays sowing.

Analysis of variance showed the reported biomass yield had significant difference within treatments (< 0.001) while number of plants within farms was unrelated to biomass yield.

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The results of this study show that planting dates have significant effects on number of plants, biomass and grain yield in maize.

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TECHNOLOGY OF APPLICATION OF BIOSTIMULATOR (MICROZYM-2) IN THE CULTIVATION OF PEANUT VARIETIES IN THE CONDITIONS OF UZBEKISTAN

Abstract. This study was conducted in experiment fields in the Plant Science department of Tashkent State Agrarian University in 2014–2016. The experiment was performed in split-plot design with 4 replication. Based technology for the use of biostimulator Microzym-2 under peanut cultivation, determined the economic efficiency of the studied peanut varieties depending on the agro technological elements in obtaining a high and quality yield. When using the biostimulator Microzym-2 with a rate of 30 l/t before sowing peanut seeds, the yield of pods of the "Salomat" variety was higher by 0,14 t/ha, and the "Mumtoz" variety by 0,11 t/ha compared to the control (0,12 t/ha). When using mineral fertilizers with a rate of $N_{150}P_{150}K_{100}$ kg/ha with the introduction of the biostimulator Microzym-2 before sowing seeds, as well as in the phase of flowering-pods formation, the grain yield of the Salomat variety was 2,93 t/ha, and that of the Mumtoz variety was 3,32 t/ha.

Keywords: Peanut (Arachis hypogaea L.), experiment, Microzym-2 biostimulator, design, replication, statistic, flowering, maturity, seed weight, pods, yield.

Introduction

Arachis Hypogaea L., commonly known as peanut, groundnut, monkey nut, goober, or earth nut because the seed develop underground, is in the division Papiolionaceae of the family Leguminoceae[1; 3]. The peanut is only one of a few hundred species of legumes that produces flowers above ground but develops the fruit below ground. Peanuts are native to South America and were cultivated in pre-Columbian native societies of Peru as early as 3000 bc. Peanuts probably originated in the region of eastern South America, where a large number of species are found growing wild [4; 5].

In 2018, world production of peanuts (reported as groundnuts in shells) was 46 million tonnes, led by China with 38% of the global total, followed by India (15%). Other significant producers were Nigeria, Sudan, and the United States [1; 2; 7].

At present, to meet the needs of the world population with food, it is important to increase the yield and quality of oilseeds, including peanuts. Globally, peanuts are sown in 117 countries of the world on

an area of 27.66 million hectares, the total yield is 43.98 million tons, and the average yield is 1.59 t/ha.

This crop on the Asian continent is cultivated on 56% of the area, in Africa on 40% of the area, where these continents account for 68 and 25% of the total production. Uzbekistan ranks 51st in the world for the cultivation of peanuts. To date, the scientific substantiation of the technology of cultivating varieties of peanuts and providing the population with food by increasing the gross yield is an urgent issue.

In the countries of the world that cultivate peanuts, special attention is paid to increasing the yield and quality of seeds due to soil conditions, varietal characteristics and advanced methods of agricultural cultivation technologies. Proceeding from this, scientific research on the creation of new high-yielding peanut varieties with high grain quality and suitable for processing, improving the cultivation technologies inherent in agricultural technologies, increasing the yield and quality of seeds of peanut varieties by optimizing the timing of sowing seeds, irrigation regimes, norms of mineral fertilizers, accelerating growth, development, due to the use of growth stimulants, meeting the requirements of the country's population with oilseeds and confectionery products, providing livestock with nutritious feed are relevant.

For the intensive development of agriculture, an increase in the volume of cultivation of exportable products, as well as ensuring food security and preserving soil fertility, an urgent task is to conduct

scientific research on the optimal timing of sowing new varieties of peanuts, the irrigation regime, on the effective use of mineral fertilizers and biostimulants in conditions of irrigated typical serozem soil.

Extensive research work on environmental testing and selection, increasing the yield and quality of seeds, as well as improving the technology of cultivation in different soil and climatic conditions of varieties of peanuts with high and high-quality yield indicators were carried out by leading international scientific centers and higher educational institutions, such as American Peanut Research and Education Society, UF-University of Florida IFAS Research (USA), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Center for Agricultural Research in the Dry Areas (ICARDA), Shandong Peanut Research Institute (China), KOPIA (Koreaat the Krasnodar State Agrarian University (Russia), the Research Institute of Crop Production, the Tashkent State Agrarian University (Uzbekistan).

Materials and methods. Field studies were carried out at the experimental station of Tashkent State Agrarian University. The experimental station is located near Tashkent, in the upper part of the Chirchik river, Kibray district of the Tashkent region, at an altitude of 481 m above sea level, $41^0\,11^{II}$ northern latitude and $38^0\,31^{II}$ east longitude. The terrain of the site is uneven, slightly wavy, with a general slope to the Salar canal. Irrigation water was pumped from the Bozsu channel.

Table 1. – The soil characteristics of the experimental area

No.	Depth (sm)	Gross content,%				Mobile forms, mg/kg		
		humus	nitrogen	phosphorus	potassium	$N\text{-}NO_3$	P_2O_5	K_2O
1.	0–30	0.925	0.083	0.152	1.33	4.8	47.1	180.7
2.	30–50	0.715	0.070	0.134	1.30	3.2	40.3	162.0

The soil of the experimental site is long-irrigated sierozem, non-saline, with a low content of humus 0,9–0,7%, nitrogen 0.082–0.066%, phosphorus 0.153–0.139%, potassium 1.33–1.30%

Field and laboratory methods of research, developed by the Uzbek Research Institute of Plant Production, were used. Phonological observations were

conducted according to the Methodology of the State Variety Testing of Agricultural Crops. Statistical processing of data was carried out according to

B. Dospekhov [6]. Application of organic and mineral fertilizers and necessary agro technics on these soils, enable to obtain the high yields of field crops.

Climatic condations. The climate of Tashkent region, as well as of Uzbekistan in general, has a sharply continental character. Spring comes early: at the beginning of March, the air temperature rises noticeably, although sometimes a sharp cooling occurs. During this period a significant part of the annual precipitation falls. Summer is long, hot and dry.

Table 2. – The climatic conditions during the growing season and long years mean (LEM=1960–2016)

Month	Mean temperature (°C)				Total rainfall (mm)			
	Long years mean	2014	2015	2016	Long years mean	2014	2015	2016
January	0.2	2.6	2.4	6.1	62.3	92.4	98.2	95.9
February	2.4	−3.4	5.9	7.7	74.5	38.7	103.6	7.5
March	8.0	8.9	7.6	12.9	87.8	100.4	91.4	115.4
April	14.8	13.7	17.1	15.3	71.8	70.4	65.5	31.5
May	20.1	23.1	22.1	20.7	39.9	15.2	85.5	54.6
June	25.4	26.8	27.6	26.5	12.1	7	24.9	14.9
July	27.2	26.3	29.1	27.9	4.0	0	0	1.6
August	25.4	26.6	26.4	27.3	2.5	0	3.6	0
September	20	20.7	20.1	23.8	4.8	1.0	4.8	5.8
October	13.7	12.7	14.4	11.6	33.4	61.4	104.8	38.2
November	7.4	5.2	7.4	5.7	55.2	76.4	98.3	57.3
December	2.5	3.1	7.0	5.0	70.2	35.4	65.8	88.6
Average	13.9	13.9	15.6	15.9	518.5	498.3	746.4	511.3

Sometimes precipitation falls in the month of June in the form of rains, but then comes hot and dry weather, usually continuing until late autumn. The maximum air temperature reaches 43 °C in July, sometimes in August.

Results. It was observed that in the years of the experiment, depending on the climatic conditions, field germination period and duration of the field germination of the peanut variety seeds were different. It was established that peanuts are a thermophilic crop. The optimal temperature for the growth and development of this culture is 25–30 °C. At temperatures below 12 °C, no fruit is produced. Usually sprouting of peanuts seeds begins at a temperature of 14–15 °C.

The aim of the study is to scientifically substantiate the technology of using a biostimulant for morpho-biological characteristics, photosynthetic activity, oil content and the formation of crop elements of local varieties of peanuts.

The technology of using biostimulant in the cultivation of peanuts – the technology of using the biostimulant Microzym-2 in the cultivation of varieties of peanuts before sowing seeds, as well as in the phases of flowering and bean formation, has been analyzed, which contains data on field germination of seeds, development phase, stem height, leaf area and yield peanuts.

When treating the seeds before sowing with the biostimulator Microzym-2 (30 l/t), seedlings were obtained 3–4 days earlier and full seedlings were obtained. The field germination capacity of the Salomat variety was 90%, and that of the Mumtoz variety was 92%. The real density of the "Salomat" variety was equal to 120.0 thousand pieces/ha, and the "Mumtoz" variety was 122.8 thousand pieces/ha. The data

obtained show that when processing peanut seeds before sowing with the biostimulant Microzym-2, the germination of seeds is accelerated and an optimal plant density is ensured.

The experience revealed the following patterns of the effect of the biostimulant Microzym-2 on the phases of development of peanuts. For example, in the "Salomat" variety on the control variant without mineral fertilizers, the beginning of flowering phase was noted on June 2, when mineral fertilizers were applied at a rate of $N_{150}P_{150}K_{100}$ kg/ha on June 6, and in the "Mumtoz" variety, these indicators fall on June 13–15, respectively. When treated with the biostimulant Microzym-2, the shoots of the Salomat variety began on June 2–4, and the "Mumtoz" variety on June 12–15, where the flowering phase also differed by 2 days.

Similar cases are observed when processing the biostimulant Microzyme-2 before sowing seeds and in the phases of flowering – the formation of beans, where the phase of bean formation and ripening differs from 1–3 days to 7–8 days, which creates optimal conditions for the full ripening of the beans due to lengthening the developmental phase.

In particular, against the background of mineral fertilizers, the period from sowing seeds to ripening was 130 days for the Salomat variety, and 147 days for the Mumtoz variety; The Salomat variety was 138 days, and the Mumtoz variety was 154 days.

The use of the biostimulant Microzym-2 together with mineral fertilizers influenced the intensive growth, development and obtaining of a bountiful harvest. The experience determined the significant influence of the studied factors on the height of the peanut stalk.

The existence of a high positive correlation between the yield of beans and the oil content of seeds of peanut varieties under the influence of the biostimulator Microzyme-2 was revealed *(r=0.675)*.

When processing seeds before sowing, in the phases of flowering and bean formation, the stem height of the Salomat variety was 45 sm, and that of the Mumtoz variety was 40.9 sm, which is 10.3 and 9.2 sm higher compared to the control variant. Experimentally, when treating seeds before sowing with a biostimulator Microzim-2, the leaf surface area of the Salomat variety was 27.8 thousand m^2/ha, and the Mumtoz variety was 26.9 thousand m^2/ha, which is 1.6–1.9 thousand m^2/ha is higher compared to the control.

Table 3. – Influence of biostimulator Microzym-2 on the development phases of peanut varieties

| No. | Experience options | Timing of application | | | Seed germination | The beginning of flowering | Pods formation (grains) | Ripening phase | Vegetation period |
		application rate before sowing, l/t	application rate in flowering phase bean formation, l/ha	the rate of use of mineral fertilizers, kg/ha					
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
	Salomat variety								
1.	Control	–	–	–	6.05	2.06	11.06	2.09	119
2.	Control	–	–	$N_{150}P_{150}K_{100}$	6.05	6.06	18.06	8.09	130
3.	Microzym-2	30	–	–	4.05	2.06	12.06	5.09	124
4.	Microzym-2	30	40	–	4.05	4.06	15.06	10.09	129

1	2	3	4	5	6	7	8	9	10
5.	Microzym-2+NPK	30	–	$N_{150}P_{150}K_{100}$	4.05	6.06	19.06	15.09	134
6.	Microzym-2 +NPK	30	40	$N_{150}P_{150}K_{100}$	4.05	6.06	21.06	19.09	138
Mumtoz variety									
7.	Control	–	–	–	8.05	13.06	24.06	16.09	131
8.	Control	–	–	$N_{150}P_{150}K_{100}$	8.05	15.06	01.07	02.09	147
9.	Microzym-2	30	–	–	6.05	12.06	25.06	21.09	138
10.	Microzym-2	30	40	–	6.05	13.06	29.06	28.09	145
11.	Microzym-2+NPK	30	–	$N_{150}P_{150}K_{100}$	6.05	15.06	02.07	04.09	151
12.	Microzym-2+NPK	30	40	$N_{150}P_{150}K_{100}$	6.05	15.06	04.07	07.10	154

It is necessary to note the increase in the effectiveness of the biostimulator Microzyme-2 against the background of mineral fertilizers. At an annual rate of mineral fertilizers $N_{150}P_{150}K_{100}$ kg / ha with the use of a biostimulator Microzym-2 before sowing seeds, as well as in the phases of flowering and bean formation, the leaf surface area of peanuts of the Salomat variety was 40.3 thousand m²/ha, and the Mumtoz variety 43.4 thousand m²/ha.

The studies have determined the significant effect of the biostimulant Microzyme-2 on the yield of peanut beans.

Conclusions. When using the biostimulator Microzym-2 with a rate of 30 l/t before sowing peanut seeds, the yield of pods of the "Salomat" variety was higher by 0.14 t/ha, and the "Mumtoz" variety by 0.11 t/ha compared to the control (0.12 t/ha). When using mineral fertilizers with a rate of $N_{150}P_{150}K_{100}$ kg/ha with the introduction of the biostimulator Microzym-2 before sowing seeds, as well as in the phase of flowering-pods formation, the grain yield of the Salomat variety was 2.93 t/ha, and that of the Mumtoz variety was 3.32 t/ha.

The economic efficiency of the use of the biostimulator Microzym-2 in the cultivation of peanuts has been determined. When processing seeds before sowing at a rate of 30 l/t, and in the flowering phase – the formation of beans at a rate of 40 l/ha with a biostimulator Microzym-2 with fertilizing with mineral fertilizers at a rate of $N_{150}P_{150}K_{100}$ kg/ha, the net income was 9236.8 thousand sum/ha, the level profitability 70.4%.

To obtain a high and high-quality yield of peanut grain in the conditions of irrigated typical serozem soils of the Tashkent region, it is recommended to treat with a biostimulator Microzym-2 before sowing seeds with a rate of 30 l/t, in the phases of flowering and formation of beans with a rate of 40 l/ha.

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STUDENTS' ABILITY IN THE USE OF JAPANESE HUMBLE WORDS (*KENJOOGO*)

Abstract. Japanese speech acts are known as *keigo* consisting of *sonkeigo* (words for respect) and *kenjoogo* (words for humility). The *kenjoogo* expresses respect to the hearer and to a person who becomes the object of conversation. This study determines the ability of Japanese non-native learners using *kenjoogo* and describes factors underlying the errors in the use of *kenjoogo*. This study uses mixed methods and involves 23 respondents from USU's Japanese Literature Study Program and 19 respondents from UNRI's Japanese Language Education Program. Data on errors are gathered from written tests. The results indicate that the ability of respondents from USU in using *kenjoogo* is 43.11% and from UNRI is 35.08%. The percentages show that their abilities are low (or under 50%). What should be done by lecturers is to improve their quality in learning process practically.

Keywords: speech acts, *keigo*, *sonkeigo*, *kenjoogo*, ability.

Introduction

One of language functions is as a tool of social interaction among humans. When interactions occur in social contexts, people involved in interactions must be able to communicate verbally. A speaker will get a high status if he/she can communicate verbally well. The relationship between a speaker and a hearer in speech cannot be considered simple. Some important factors that affect speech are power and distance between them. Power refers to three types of social status relationships, namely whether the status of the hearer is higher, equal or lower than the speaker. Distance refers to the psychological distance existing between the speaker and his / her partner.

The difficult Japanese subject for non-natives like Indonesians is *keigo* (soft language). In Indonesian there is almost no level of subtlety in the language, except only formal and informal words are available. A communication in Indonesian is considered generally good in accordance with the rules of grammar that apply. If *keigo* (敬 語) and *sonkeigo* (尊敬 語) refer to only words of respect, the *kenjoogo* (謙 譲 語) ia due to words of self-degradation. Mistakes in using *kenjoogo* can cause problems. In this paper we formulate two questions: how are students able to use *kenjoogo*? and by what factors are students affected in the use of *kenjoogo*?

Methodology

The research approaches are quantitative and descriptive qualitative. The qualitative descriptive is used to analyze data in Japanese writing test of the use of *kenjoogo*. Data collection is gathered from changing and selecting words in *kenjoogo*. The time allotted to do the test is 100 minutes. Then, three steps follow: to mark error sentences, to determine the form of errors, and to compare the students's abilities in using *kenjoogo*.

The quantitative data is calculated on the basis of average of correct answers. The average can determine the percentage of errors in *kenjoogo*. There were 65 respondents from sixth semester, who have taken *keigo* lessons (*sonkeigo* and *kenjoogo*) in the *Bunpo* course and especially who have used Waku's [11] *Minna No Nihongo* Volume II (subjects 49 and 50). Of 65 respondents, 19 are taken from UNRI's Japanese Language Study Program and 46 from USU's Japanese Literature Study Program. Sampling uses non-probability, namely systematic sampling [7], so, of the 46 people who have learned *kenjoogo*, respondents are classified in sequence by an odd number.

This research was conducted at two locations: the Japanese Literature Study Program, Faculty of Cultural Sciences, USU in July 2, 2019 in Medan, North Sumatera and the Japanese Language Study Program, Faculty of Teacher Training and Education, UNRI in July 8, 2019 in Pakan Baru, Riau.

Literary review. Definition and use of *keigo*.

Lexically, *keigo* means words of respect or expression of respect [5]. It is a way of using language based on the various relationships between the speaker and the interlocutor and between the listener and the person who is the subject of conversation. The form of expression shows the relationship between them.

There are three factors that must be considered in the use of *keigo*:

- *Keigo* is used to show respect from speaker with lower social status to hearer with higher status [1].
- *Keigo* is used to show respect to a hearer whom the speaker is not familiar him [1].
- *Keigo* is used to pay attention to the *uchi* and *soto* relationship. The first refers to a group in a private environment, such as in a family or office environment and the second refers to an environment beyond the *uchi*. When a speaker talks about *uchi no hito* (a hearer in his own environment) to *soto no hito* (a hearer outside his own environment), he must treat *uchi no hito* the same as himself. Therefore, even though the position of *uchi no hito* is higher, the speaker does not use *keigo* to respect him [8].

Types of *keigo*

Soepardjo [9] argues *keigo* is divided into *sonkeigo* and *kenjoogo* (see also Nomura and Koike Seiji in Sudjianto and Dahidi [6]) who divided *keigo* (敬 語) into *sonkeigo* (尊敬 語) meaning words of respect and *kenjoogo* (謙 譲 語) referring to words of condescension.

Definition of *kenjoogo*

The *kenjoogo* means humble words for self. Sutedi [10] states *kenjoogo* is expression to respect the other party or the person who becomes the topic in the indirect conversation in which the speaker lowers his own position or behavior. Wulandari [12] argues *kenjoogo* is used to respect the interlocutors who are superior or *soto no hito*. The *kenjoogo* is also used when the speaker wants to speak from *uchi no*

hito (insider) to *soto no hito* (outsider). Mawitjere [5] adds that *kenjoogo* is a way of speaking that expresses respect for the other person(s) who is the topic of conversation by using humble self.

Types of *kenjoogo* formation

In 3A Corporation [2] there are two forms of *kenjoogo*:

1. Form of [お / ご 〜 し ま す] "o / go ~ ni suru"

a. Verb (Group I / II) (Form ま す) し ま for examples:

重そうですね。お 持 ち し ま し ょ う か。

'Looks heavy huh. Let me bring it '

コーヒーを　お 入 れ し ま し ょ う　か。

'Let me pour the coffee'.

b. Verbs (Group III), for xample:

江戸東京博物館へ　ご 案 内 し ま す。

'Let (me) take (you) to the Tokyo Edo Museum'.

2. Special words for humble self

Some verbs have a special self-degrading word or *tokubetsu na kenjoogo* (特 別 な 謙 譲 語) [2], for example:

A: あ し た は　だ れ が 手 伝 い に 来 て く れ ま す か。

'Who will come to help tomorrow?'

B: …私が 伺 い ま す。 'I am coming'

Factors that cause errors

Lightbown and Spada [4] argue there are 4 causes of errors: **o**ver generalization, ignorance, incomplete application, and false concept of hypothesis.

Table 1.– Special Words for Condescension (Tokubetsu Na Kenjoogo)

No	Japanese	Kenjoogo	English
1.	行 き ま す 'ikimasu'	参 り ま す 'mairimasu'	To go
2.	来 ま す 'kimasu'	参 り ま す 'mairimasu'	To come
3.	い ま す 'imasu'	お り ま す 'orimasu'	There is/there are
4.	食 べ ま す 'tabemasu'	い た だ き ま 'itadakimasu'	To eat
5.	飲 み ま す 'nomimasu'	い た だ き ま 'itadakimasu'	To drink
6.	も ら い ま 'moraimasu'	い た だ き ま 'itadakimasu'	To accept
7.	言 い ま す 'iimasu'	申 し ま す 'moushimasu'	To say
8.	す る 'shimasu'	い た し ま す 'itashimasu'	To do
9.	知 っ て い ま す 'shitte imasu'	存 じ て お り ま す 'zonjite orimasu'	To know
10.	知 り ま せ 'shirimasen'	存 じ ま せ ん 'zonjimasen'	Not know
11.	見 ま す 'mimasu'	拝 見 し ま す 'haiken shimasu'	To see
12.	き き ま す (う ち へ 行 く) 'kiku' (uchi e iku)	伺 い ま す 'ukagaimasu'	To ask, to hear, to visit
13.	会 い ま す 'aimasu'	お 目 に か か り ま す 'omeni kakari-masu'	To meet

Results and discussion

In case of question no. 6 (with 4 sub-questions) respondents change the existing verbs to special the *kenjoogo* verbs. The ability of USU students is 46.73% and the ability of UNRI students is 23.67%. With regard to the form of error, students do not yet understand the special form of *kenjoogo* verbs. In case of question no. 7 (with 4 sub-questions) the instruction is to select one word in the sbox and change it to *kenjoogo* in the form of [お / ご 〜 し ま す] *o / go ~ ni suru*, and fill in the verbs according to the context of the sentence. With this, the ability of USU and UNRI's students is 41.30% and 56.57% respectively. About the form of error, the students cannot distinguish and tend to be confused with the use of お verb (group I. II) (form ま す) し ま す' with' ご verb (group III). With

reference to question no. 10 (with 8 sub-questions) the students change the verb in parentheses into the *kenjoogo* verb in the form お verb (form ま　す) し ま　す. The ability of USU and UNRI's students is 41.31% and 24.99%. About the form of error, the students do not understand the basic form of verbs, and the formation of *kenjoogo*.

Table 2. The Percentage of Students' Ability from USU and UNRI in *Kenjoogo* Questions

Question	USU	UNRI
Number 6	46.73%	23.67%
Number 7	41.30%	56.57%
Number 10	41.31%	24.99%

Table 2 shows that the average ability of USU and UNRI's students is 43.11% and 35.08% respectively.
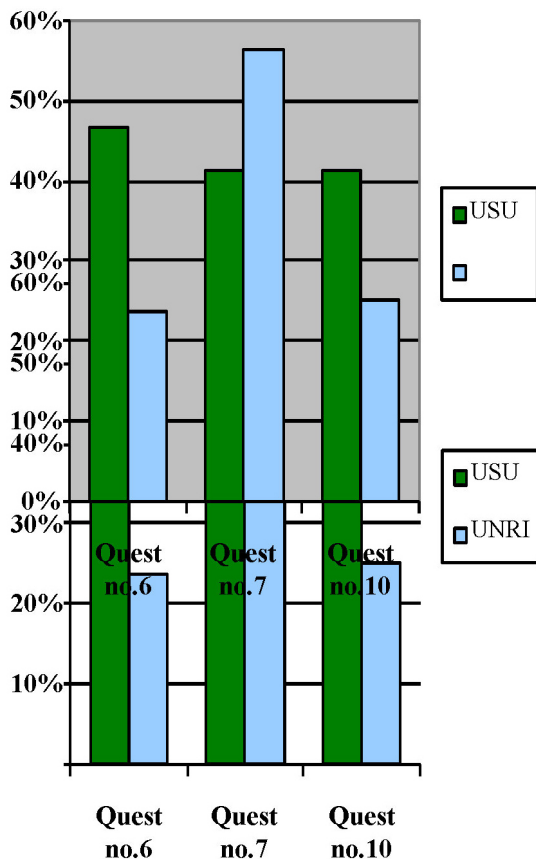

Figure 1. Students' Ability from USU and UNRI in *Kenjoogo* Questions

Figure 1 shows that the students' in using *kenjoogo* is low, i.e, under 50% on average from both universities. In case of students' ability in *Keigo* (Mixed *Sonkeigo* and

Kenjoogo), for question no. 8 (with 4 sub-questions), the students have given their answers about sentences from *tokubetsu na sonkeigo* (special respect) into *tokubetsu na kenjoogo* (specially humble words). Their ability is 39.12% and 19.73% from USU and UNRI. About errors, they are often confused with the verbs of special forms of *sonkeigo* with *kenjoogo* special verb forms.

About question no. 9 (with 6 sub-questions) the students are asked to change the sentence from an ordinary verb to a special form of *sonkeigo* and to change their sentences from an ordinary verb to a *kenjoogo* special form. Their ability shows 15.94% and 2.63% from USU and UNRI respectively. With regard to errors, students are often confused between the verbs of special forms of *sonkeigo* with *kenjoogo* special verb forms.

Table 3. Students' Ability in *Keigo* Questions (Mixed *Sonkeigo* and *Kenjoogo*)

Question	USU	UNRI
Number 8	39.12%	19.73%
Number 9	15.94%	2.63%

From Table 3 above it can be seen the average ability of students in choosing the verb *keigo* (*sonkeigo* and *kenjoogo*). Their ability is 27.5% and 11.2% of USU and UNRI. Figure 2 shows students' low ability sitting under 50% on average.
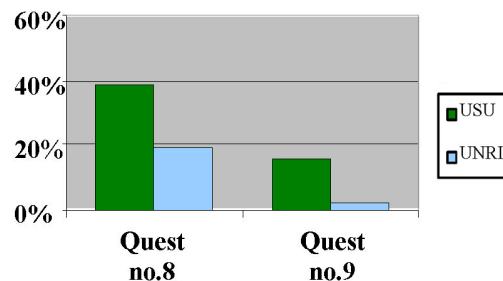

Figure 2. Students' Ability from USU and UNRI in *Keigo* Questions (Mixed *Sonkeigo* and *Kenjoogo*)

With reference to questionnaires, the overview of the results shows that, to the question 'Do you think *keigo* is difficult?', USU's students respond 52% 'yes' (difficult) for question (a) and 48% for 'yes' (very difficult) for question (b). UNRI students give their answers 48% 'yes' (difficult) for question (a) and 52%

'yes' (very difficult) for question (b). About the question 'Which type of *keigo* do you think is the most difficult?' the students of USU respond for 20% for *sonkeigo* for question (a), for 19% for *kenjoogo* for question (b), for 75% for *sonkeigo* and *kenjoogo* for question (c), and for 4% for no answers for question (d). While, UNRI's students give -% for *sonkeigo*, *kenjoogo*, and 89% for *sonkeigo* and *kenjoogo*, and 11% giving no answers.

Generally, students have the following reasons why the use of *keigo* is very difficult:

- They feel difficult to distinguish and use the words *sonkeigo* and *kenjoogo* when they are in sentences;
- They cinsider it difficult because the changes in shape and use is complicated;
- They feel difficult because *keigo* is rarely used in everyday conversation but they only use ordinary verbs instead;
- They think it difficult because they feel doubt to choose the right words when distinguishing the use of *sonkeigo* and *kenjoogo*;

- They feel difficult because its use depends on certain situations and they must determine to whom other person is talking to and who is speaking.

Conclusions

The overall causes of error lie on the lack of competence. Students' ability to use *kenjoogo* can low (below 50%). This is due to the changes in the verb forms and in complicated uses. *Kenjoogo* is difficult to memorize and use. Based on the analysis of errors and information related to an understanding on the use of *kenjoogo*, the factors that are potential to cause errors are: (a) over generalization in which students consider a part or rules on the part might be expected by them, (b) incomplete application of rules which cause students careless in *keigo*, especially when they change verbs into specific forms of each type of *keigo* (*sonkeigo* and *kenjoogo*), and (c) ignorance of rule of restrictrion, such as sentence structure, verb placement , conjugation and others.

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THE POETIC DISCOURSE OF THE ALIENATED IN L. EDWARD SCOTT'S A WOMAN CALLED MAASUMAA: A DECONSTRUCTIONIST REVIEW

Abstract. The paper applies deconstructive analysis on L. E. Scott's A Woman Called Maasumaa (1995)*, mainly exploring both thematic and suggestive binary oppositions and signifiers/signifieds, Deconstruction addresses a text as an independent entity and looks into the suggestive structures that formulate the sensible poetic discourse and signify its thematized meanings and ideas. Obviously, deconstruction considers any literary text as an open-ended structure with no center of finite analytic signification. Deconstruction builds its views on Ferdinand de Saussure's concepts of binary oppositions, signs (signifiers/signifieds), and differance. Consequently, deconstructionist reading of a text approaches its possible explosive meanings. Scott is one of those modern poets who courageously express their own thoughts and ideas with exciting ambivalences, mysteries, and contradictions of human existence. The fragmented self and the cynical voices towards objects and people offer a chance for a deconstructive anatomy of Scott's Maasumaa. In this light, the current paper thematically explores the structural means composed of signifiers, signifieds, and binary oppositions that signify the poet's ideas of escapism, fragmentation, solitude, and instability.

Keywords: Deconstruction, Signs, Signifiers, Signifieds, Binary Oppositions, Fragmentation, Poetic Sensibility.

1. Introduction

1.1 Deconstruction and Poetry (* Henceforth is referred to as Maasumaa)

L. E. Scott is an African American jazz poet who gained a lot of experiences and knowledge from his travels and reading other cultures. He eventually settled in New Zealand to escape his past for personal, social, and financial reasons. Scott's major human themes include love, gender, death, existence, politics, war, exile, and spirituality based on his own life experiences. On his part, John Thomson states that Scott's exile poetics imply "gentle mediations, almost spiritual … centered on water, trees, and earth, as well as people … and balance" [12, 87]. Therefore, Scott's poetics are an inspiring source for deconstruction to reveal their deep signs and binary oppositions that bear his human ideas and experiences. Pinpointing the functions of deconstruction, Jacques Derrida states that it "must always aim at a certain relationship, unperceived by the writer, between what he commands and what he does not command of the patterns of the language that he uses" [3, 158]. Similarly, J. Hillis Miller describes deconstruction as "a mode of interpretation [that] works by a careful and circumspect entering of each textual labyrinth … [and] is not a dismantling of the structure of a text but a demonstration that it has already dismantled itself [6, 126]. Both critics emphasize the significance of deconstruction in interpreting literary works from within in the light of their language, signs, and

oppositions. Accordingly, deconstructive readers are interested in tensions, gaps, ironies, aporias, silences, paradoxes, contradictions, conflicts, digressions, ambiguities, puns, multiple meanings, and intertextuality. On her part, Lois Tyson emphasizes the significance of deconstruction in literature; she argues that this theory fosters the ability "to think critically and to see more readily the ways in which our experience is determinate by ideologies" of which readers are not aware [12, 241].

Poetic deconstruction has its own aesthetics that are intertwined together to produce a complete poetic textual entity. Accordingly, this paper traces these aesthetics and components as both signifieds and signifiers in Scott's poems of *Maasumaa* for their aesthetical structural paradigms and thematic manifestations. I choose this collection because it presents dynamic poetic expressions, words, and structures, which offer signifiers and signifieds with diverse meanings and interpretations. In addition, Scott is the least studied poet for several reasons: first, he comes from "a different literary background," and his subject matters include the US anxieties and the "political polemic … charismatic and confrontational manners" [8, 10]. Such reasons made him a less-received poet for his poetic career was troubled and unsecured, provoking readers' interest to investigate his fragmented poetics.

Modernist poetics are concerned with deconstructive aesthetics for they would produce an implied poetic and thematic discourse rife with oppositional signifiers. Further, they resolve a lot of ambiguities that readers may face while reading and appreciating poems. Therefore, deconstruction exposes the contradictory oppositions of language, showing the mode this text deconstructs itself from within. Furthermore, "to deconstruct a discourse is to show how it undermines the philosophy it asserts or the hierarchical oppositions on which it relies" [5, 86]. Thus, the paper addresses a set of suggestive binary oppositions, signifiers, poetic images, artistic intertextualities, narrative techniques, and contextual and intratextual questions and ambiguities that entail deconstruction. To convey its juxtaposed ideas and themes, *Maasumaa* employs a variety of both binary oppositions and signifiers that entail thematically deep and artistic deconstructive explication.

In addition, various thematic binary opposites such as birth and death, and love and hatred, winner and loser among others dominate *Maasumaa*. Through its multi-layered semantic binaries, *Maasumaa* offers a sensible human tone of pains and passions. In this respect, Peter Mitchell [7] describes Scott's poetics as "embedded in earth tones and dwell in the tortured spirit of a man looking for meaning in difficult times." Moreover, Scott's poetics are lamentative with dark tone of human inevitable absurd mortality. Obviously, the dynamic thematic imagist components in Scott's poetic discourse constitute a structural phenomenon of both signifiers and signifieds that require interpretive deconstruction. Moreover, Scott's poetry is "associated with the New Black poetry" of the 1960s with strong authentic voices that make him "part of the rich heritage of African-American writers' contributing much to the American culture and legacy [8, 12]. Therefore, such dynamic poetic voices establish their thematic implications of vitality and performative structure, suggested by the signifying concepts of absence and presence.

2. Voicing the Thematic Binary Opposites of the Poetic Self

Thematically, binary oppositions constitute a major means to communicate with the other and express the individual thoughts based on the relationships among the components of human existence. Such binary oppositions construct an extended textual drama that feeds the poems with tension, depth, excitement, and dialectique. These oppositions result in cognitive conflicts among the poetic signifiers. Defining a binary opposition as a literary critical term, Paul Inns states that a binary opposition implies "[a] relationship of opposition and mutual exclusion between two elements: […] masculine/feminine, cold/heat, or up/down" [4, 74]. Pinpoint-

ing its structuralist significance, the Swiss linguist Ferdinand de Saussure indicates that "[t]he binary opposition is the means by which the units of language have value or meaning; each unit is defined against what it is not" [9, 115]. Such definite binary oppositions ignite diversified tensions and anxieties in both the readers' and poet's psyches in any human society. Scott's poetic tensions imply his sense of alienation and fragmentation. Moreover, Scott's poetics signify that human life, individually or collectively, is a dramatic conflict between oppositional structures, in which the binary oppositions depict the world as again alienated, subversive, conflicting, grimy, and anarchic. In this respect, Scott's poetry follows "oral-based style" fused with Black jazz and blues, folk cadences, African chants, gospel rhythms, dramatic forms, and the spiritual teachings of the Black church [8, 12].

From this definition, a binary opposition thematically implies a pair of words that suggest two opposed ideas, and readers can realize the significance of each word by the virtue of its opposition/s. For example, readers can conceive the meaning of words such as tall, absence, white, faith, and man by the means of their opposites, short, presence, black, reason, and woman respectively. In this regard, Jonathan Culler affirms, "Deconstruction seeks to undo all oppositions that, in the name of unity, purity, order, and hierarchy, try to eliminate difference" [5, 278].

In poetry, a binary opposition determines the thematic meaning of a word in the light of its opposites, creating a poetic significant tension that entails deconstruction. Thus, in deconstruction, analytically reading a poem "rests on a binary opposition in which one member of the pair is privileged over the other" [12, 255]. In this sense, *Maasumaa* presents self-deconstructive poems that bring sensibly suggestive common binary oppositions such as good/bad; past/present; absent/present; good/corrupt; love/hate; love/lust; hopefulness/hopelessness among others. Furthermore, Scott presents his ideology by evoking significant words like life, voices, mouths,

sunlight, warmth, shadows, and jailer as signifiers that evoke meaningful and suggestive oppositions that bear multiple signifieds. Such semantic mobility creates Scott's poetic world of confusion, fragmentation, and alienation. Certainly, Scott's binary opposites signify "real life absurdities – a sort of ironic satire of both language and behavior" [11, 93]. In this respect, "Reading … can't legitimately transgress the text toward something other than it … or toward a signified outside the text whose content could take place could have taken place, outside of language … in the sense that we give here to that word, outside of writing in general … There is nothing outside of the text" [3, 158]. In this light, deconstructing a text means exploring its signification system of oppositions and tensions from within, as a text is a unique informative entity.

3. The Dynamicity of the Poetic Binary Oppositions in *Maasumaa*

The dynamicity of the poetic binary oppositions in *Maasumaa* seems a consistent form of the poetic expectational tone. For example, the speaker presents poetic structures based on the present and past verbs as opposites,

There is this early morning hurt

That has nothing to do with the day before

But it gives birth to the coming one (*Wake – Day by Day*, p. 5)

This implied themato-poetic discourse does not refer to the present content with specific chronotropic significance. Rather, it signifies temporal facets that involve textual signifying perspectives, manifested in the opposition-bearing metaphorical words of "early morning, hurt, the day before, birth, and the coming one." Evoking binary oppositions, Scott centers his poetics on themes of "a memoir about family, friends, and love," among other ideas [11, 88]. Also, such oppositional words signify the fragmented psyche of the poet who becomes a representative of modern man who experiences similar pains and passions. In this sense, Scott condenses his binary oppositions to reflect daily human life thematically poeticized

in *Maasumaa*. Moreover, Scott's binary oppositions create a deep transformation in his poetic structures of oppositional dynamicity that suggests the poetic self's mental and intellectual instability. Positively, Scott makes his poetry speak loud to convey his sense of being and of self-realization. Therefore, Scott gives deeper insights about human realities, concerns, and dreams. In this concern, Scott reflects on "Personal poetic realities [that] are artifices constructed out of pieces of the truth [which] the poetic deconstruction of reality allows us to better see its essences" [7]. Thus, Scott represents modern man who loses faith in reality, truth, self, other, and future.

Moreover, the thematic semantics proliferation in Scott's poetics indicates that there are certain aesthetic pauses of stability resulting from the diachronically poetic moment manifested in "there/this/pain/since morning." Accordingly, the thematic content of the binary chronotope refers to the suggestive coupling of both time and place in the poem, present/absent/time/manual" in their oppositional tone. However, these tempo-spatial tools exist in the poetic spirit of the perspectival communication with textual explicit implications. As a result, the dynamicity of the oppositional poetic semantics fuses the diversified flashbacks and the expected relationships of proximity and remoteness to expose the poetic fragmented self and the painful presentism of the text itself. In this light, Scot offers poems of a human mental and emotional dynamicity composed of words as signifiers that reflect the way of thinking and the nature of feelings.

In *Maasumaa,* Scott presents diverse binary oppositions to express his sensible thoughts, using words like "morning, day, night, tomorrow, memories, amnesia." Such suggestive words highlight a human conflict that manifests the oppositional pattern in rejecting modern life details and contradictions. In *Memories of You Maasumaa*, Scott cries,

> Morning, day, night, kiss each other
> Exchanging memories
> If tomorrow comes with amnesia
> I shall be free of you (p. 39).

These contextual contradictions highlight the concepts of (past/present), which Scott illustrates in two contradictory images. One image, "memories," signifies the mode of sarcasm, and the other image, "kiss each other," suggests the appraised. Here, the poet presents his good character "I" as an antithesis of the other "you," a mechanism that dominates *Maasumaa.* Such presentation of despair arises from the intersection between past and present, which apparently collide and mock each other. In this sense, binary oppositions create an internal tension that intensifies feelings of fragmentation. In "*Ownership,*" Scott mentions, "a taste from yesterday" and "a living grave with flesh" to suggest the antitheses of "grave" as life-after-death and of "yesterday" as everyday/immortality. Thus, the poetic center revolves around the binaries of life/death and strength/weakness [10, 29]. Similarly, in "*Picture,*" Scott centers his poetics on the binary oppositions of "you were once a dream" and "now you are a shadow" to reveal a binary opposition that creates a tension between virtuous past and wicked present or reality and illusion [10].

4. The Poetics of Signifiers and Signifieds of the Fragmented Self

Modern poetics heavily rely on metaphorical signs in human languages. In this sense, Saussure emphasizes that any language consists of a system of signs that "are in first instance arbitrary––after which they have become conventions–– and have not taken their specific form because of what they mean, but to be different from other signs" [9, 49]. Meanwhile, Derrida divides the sign into a signifier (sound) and a signified (meaning). Every signified becomes a signifier in an infinite chain of signifiers. The sign, which exists for Derrida under "erasure," derives meanings through its "trace" in relation to other signs [3, 154]. Apparently, the concern of both critics is the semantic signs of language that have a binary body of signifiers and signifieds. Meanwhile, the French literary theorist Ronald Barthes defines the signified as "the mental representation of a thing. . . a concept" that entails deconstruction [1, 42].

Based on this ground, the point of delivering such poetic anecdotal components starts through a rhetorical trope of implicit reflections; the poet says,

> Every sound has something to do with you
> Waking
> Wind shaking the door
> Window curtains slightly moving
> Water running somewhere (*Sounds,* p. 10)

Such reflections result from thematic dynamics of signifiers as poetic cognitive suppositions that provide suggestive poetic structures. These poetic structures yield distinct communicative poetics that are aesthetically rhetorical and eloquent. Meantime, Scott condenses his metaphorical signifiers of "water, sound, wind, door, window, moving, and shaking," signifying the sensible poetic discourse of a fragmented soul. Significantly, Scott creates his masculine/gender poetics that generate a mysterious scope between the poetic signifiers and signifieds. For Barthes, poetic texts usually practice "infinite deferment of the signified," for signifiers are not "the first stage of meaning" [1, 158]. Such mysterious scope creates a tension between chaos and stability that juxtapose both night/day and past/present. Thus, Scott fuses feelings of instability and uncertainty in his poetics. In this regard, Tyson argues that for deconstruction, "language is dynamic, ambiguous, and unstable, continually disseminating possible meanings" with competing ideologies that people choose to believe [12, 252]. For instance, Scott moves from questioning his objectivity to questioning his premises and human beliefs,

> With human love
> Grief and happiness often walk together
> Unfriendly dream
> Wayward thoughts
> Ugly memories about the future (*And the Sun Went down before Night*, p. 32).

Based on the dynamicity of the significant binary oppositions, Scott objectively juxtaposes human concepts of grief and happiness, as two oppositional signifiers that reflect his internalized feelings of chaos and fragmentation. Moreover, he juxtaposes "ugly

memories and future" that represent another binary opposition of the past and present or presence and absence to emphasize his feelings of loss, uncertainty, and instability.

In fact, *Maasumaa* enables readers to contemplate the bifunctional signifying poetic discourse, which signifies the core idea of the text based on the rhythmic spirit of language, discourse, and imagery. *Maasumaa* involves poetical controversial language, antithetical indicative words, and tempo-spatial relationships that constitute the semantic poetic discourse. To exemplify, Scott addresses his other,

> There is anger too, in love
> I try to see your face
> Turning the lights off
> Sitting in the darkest corner (*Sucking on Your Face in the Dark*, p. 16).

Accordingly, the lines offer thematic content and poetic structure that signify textual aesthetics. Such aesthetics arise from the conflicting aspects of place, time, metatext, and pragmatic verbs that disclose the centers of the poetic binary oppositions of love/anger, lights/darkest, and I/you." Moreover, the poetic spontaneous flow of signifiers as thematic and aesthetic components are embodied in,

> Good news travels slowly
> And bad news ain't got no family
> they spoke of me
> as if it were they I had hurt
> And not you
> In between the voices
> Are reasons why (*Voices in the Dark*, p. 1).

These lines imply a sensible voice of the poetic self that occupies a virtual space in the binary polarities of the poetic hierarchal and anticipatory pronouns in the poetic signifiers that imply the thematic performance of objects. For instance, the poetic self refers to integrated spatial character and psychological qualities within the communicative imagist structures as signifiers. All of which signify the poetic themes like love, hatred, union, humanization, and dehumanization as signifieds. In this sense, Saussure

states that there are referential forces which control the relationship between the signifieds and signifiers [9, 75]. In addition, the realistic signifier of "news" constitutes a self-tactical performance towards the oppositional signified of the adjective "good," a process that results in the displacement of the signified in "travels slowly." Then, the poem moves to the realistic exploration of the antithesis, "bad news," and to the inevitable metaphorical signifiers epitomized by the signifier "no family." This instance substantiates the poetic signification of the signifier in "good news," which is not but a descriptive image manifested in "no family."

Furthermore, Scott's poetics suggest that his loneliness arises from the hollowness of human soul with which he cannot communicate. Such poetics embody "typographical experimentation and free and associative structure … with black idioms" [8, 12]. Structurally, Scotts uses binary opposites of good news/ bad news as signifiers; the first travels slowly, while the second travels quickly. This action creates a deep communicative gap between the self and the other and leaves both in hollowness, which creates a heinous image in the poet's psyche. Obviously, Scott's poetic mask is absent-minded and alienated; the state of loneliness makes it lost between the poetic voices, for he, eventually, experiences death-in-life [10, 1]. Such signification yields a communicative implication that signifies phonocentric events and evokes the common language of inspiration.

Moreover, the process of the poetic anticipation is embodied in the spirit of the experimental space of the signifier pronoun "I" that signifies the metaphorical and referential value of the signifier, "the voices." Yet, despite the multifaceted referentiality of "I," the poetic self thematically relies on cause-effect equation, "travels…slowly … bad news … got no family … why." In this light, the poem offers a set of binary oppositions to suggest the fragmented poetic self, who consumes the binary pronouns of "I," as the self, and you, as the other, embodying the poetic experience. This experience evokes a variety of dialectical semantics of the poetic signifiers controlled by the poetic self. In other words, the pronoun "you" is supplemented to the pronoun "I." However, both "I" and "you" fuse into one entity of "we" or "they" when the speaker invites the addressee to change and reunite: "I called and thanked them for their concern/ showing you that I could change" (*Rent on Changing,* p. 6). Significantly, both "I" and "you" reunite as a major source of change for better.

The poetic structures of *Maasumaa* generate unstable meanings of the poetic diction, signifiers/signifieds, and binary oppositions. Such a vision implies that language with its displacements and dynamic verbs seem temporal constructors and mental absences manifested in semantic scenes of prisons, loss, torment, and hallucinations. These thematic scenes are narratively suggestive to the speaker's prestigious and concrete poetic character,

So this face
mine
acts like a stranger
changing
Without my knowing
It's only what I see
on yours
What you've seen (*See You See Me,* p. 21).

Here, readers find fused signs or referents of nominal and object-oriented implications of sounds and objects, supported by the sounds of the textual dominant emotional metaphors and symbols. Such implications form paradoxical stances that reflect the sensitivity and sensibility of reading and poetic familiarization. Then, the soul of the poetic discourse in *Maasumaa* seems predisposed to analytical procedures that most likely signify a thematic play on adjectival signifiers and signifieds that identify the poetic meanings. These meanings arise with no fixed codified limits or immediate actualization of the poetic speech. For example, in the previous lines, the poet distributes the descriptive structures in the pivotal common relations of objects as signifiers such as "face, mine, yours, stranger, I see, you've seen, and my knowing." These structures form analogous and submissive modes of

deep meanings. Stylistically, Scott's poems "lack sentence structure and seem, like babies perhaps, to cry for one's attention" [11, 87]. Hence, Scott's poetic structures reflect the thematic and artistic content of the text, manifested in the poetic fragmented self.

Furthermore, the mechanisms of the poetic disclosure express the speaker's suggestive thoughts of resistance of oppression, imprisonment, injustice, and self-realization as signifieds. Such mechanisms extend the effectiveness of patience as another set of signifieds; a probability that signifies the mental influence full of poetic moments of suspense. In this regard, Scott uses indicative signifiers to reshape his own experience,

It's almost like you are a dream

Yesterday, today, and tomorrow

Being made of dreaded voices

…

Being chased by grown-up ghost stories (*Circles*, p. 27)

Here, the poet evokes certain signifiers that summon their binary oppositions, making his poetics dynamic and sensible. Such signifiers include "you, dream, yesterday, today, tomorrow, dreaded voices, ghost" that necessitate the presence of their opposites I, reality, present, past, delighted voices, and being respectively. These binary oppositions reflect the speaker's internalized feelings of torture, alienation, and fragmentation. Therefore, Scott's binary oppositions develop "the suggestive power of poetry … its distinction lies in the way it develops and explores tricks of style proper to prose and its syntax" [11, 93].

In fact, deconstruction looks at texts as crucibles of a word play with signs through differences. However, the act of deconstructive reading of the subsequent poems of *Maasumaa* guides readers to the keys of interpretive understanding and thematic semantics. For instance, the speaker says, "so dark, grey/white like … you didn't answer/He did" (*We Can Get Beyond this Other Bedroom*, p. 35). Here, the poetic discourse provides its hypothetical content of thematic signifiers because of the sensible poetic

voices of the ego. These voices violate the scheme of the poetic privacy of the suggestive referentiality of binary oppositions of colors, "dark" and white." The first is a signifier of the signifieds fear, confusion, and alienation, the second is a signifier of the signifieds purity, purgation, perfection, and equality. In Scott's symbolic significance, the colors grey and black replace the color white in "So dark, Grey/white like/It's way past the midday sun" (*We Can Get Beyond this Other Bedroom*, p. 35). To Pirie, these colors as signifiers suggest the speaker's internalized protest against "white America and the American dream." The color black works against the American dream based on racial conflict and oppression. Likewise, the color red signifies the poet's rejection of wars and destruction. Meanwhile, the color grey suggests the "seeds of doubt," manifesting "aspects of creation, birth, life" [8, 11].

Similarly, "you didn't answer/He did" implies suggestive binary opposites that signify two dynamic behaviors "did" and "didn't" as signifiers of both obedience and compliance of the first act and indifference and ignorance of the second. Accordingly, both examples of binary oppositions and sensible voices signify the contradictory entities of presence and absence, loss, and imperfection. Scott's poetry has a voice that is "harsh, angry, aggressive, and lurid in its depiction of Black life and human behavior" [8, 13]. Accordingly, through its signification of the juxtaposed binary oppositions, *Maasumaa* manifests a conflict between the hopeful and the hopeless, the good and the bad, the lifeful and the lifeless, the delighted and the fragmented, and the repressed and the repressor.

In their significant structural sense, Scott's poetics anticipate the meaning within the possible semantics and modes of narration, interpretation, questioning, and referentiality. In this concern, Pirie describes Scott as "a man with a distinctive spiritual and political message" through using techniques of "rhythmic voice intonations and … the voice as a jazz instrument" that call for human independence,

freedom, peace of mind and body [8, 13]. For instance, Scott says,

So you left me
For reasons that had nothing to do
With the coming of Jesus Christ
you opened your legs
Another man touched you (*Changing Crosses*, p. 36).

Here, the speaker evokes binary opposites of pronouns you/me and of dynamic verbs left/coming, suggesting loss of faith, split, and both mental and physical instability. However, the poetic imagery always evokes an implied level of functional binary opposites as signifiers manifested in the speaker's poetic monologue,

The music is missing in my life
Voices without mouths
Sunlight without warming and shadows
Thoughts walking in a circle of one
Bumping into themselves (*Why Am I Pointing at Me*, p. 12).

Here, the speaker recalls dynamic images that offer binary opposites of motion, light, shadow, and loss. In this regard, Barthes argues that poetic images are "polysemous;" they have signifiers that allude "a floating chain of signifieds" which may appeal to the public readers for deconstruction [1, 39–40]. By way of illustration, words like missing and without mouths signify themes of loss and silencing as signifieds that the poetic self endures.

As a poetic mural of modernist sense, *Maasumaa* presents intimate communicative signifiers that contain various binary oppositions of different reflections. Clearly, it involves many binary oppositions like male/female, I/you, walk/sleep, life/death, peace/turmoil, order/chaos, civilized/uncivilized, and present/absent. Cognately, the first term of each opposition is the privileged one, presented as the center. Through these signifying oppositions, Scott's poetics suggest a human functionality in life and simulation of modern reality full of fragmentation and disappointment. In general, the textual relationships

in *Maasumaa* remain a source of the convergence of the self, the world, and the other, as opposing signifiers of certain realistic signifieds. Accordingly, Scott's thematic selectivity of the stimuli of the text's voices relies heavily on realistic components of time, place, discourse, and the other. They prove that *Maasumaa* has imagist acts of semantic cloning between objects as signifiers and the productivity of the semantics of the emotive tension and self-repressiveness as signifieds. For instance, in *Wings*, Scott uses words like "love," "grief," and "rage" to describe his human feelings of repression and fragmentation [10, 4]. He evokes such words as signifiers to present a variety of signifieds, which include hatred, alienation, depression, and frustration.

Furthermore, the signifier pronoun "I" is problematic because it is contradictory to the pronoun "you," a thing that creates deep tension between them by means of authoritative (or gender) power. Scott addresses his woman,

I would like to cleanse your heart
To wash this new man
Out of your life
So you see
I'm still at the funeral (*Stages: Denial, Grief*, p. 20).

Here, there are two suggestive sets of words; the first set manifests Scott's problematic signifiers of "you" and "I," which signify the other and the self in a competitive manner. The second set manifests Scott's problematic signifier of gender in "woman" and "man," which signify gender conflict and unstable power relationship. In this sense, the British literary critic Catherine Belsey argues that there are two oppositional poles to the signifier pronoun "I": the omniscient and the omnipotent. This "I" is privileged as it experiences human life at a loftier level of potency than ordinary characters. It also gets dissolved in selfhood which "the phenomenal world, perceived as external and antithetical, either nourishes or constrains" [2, 68]. Thus, this antithetical "I" immunizes itself against "you." Moreover, such binaries imply a positive tension in the poetic context

that condenses its signifiers and deepen its signifieds. For instance, the poet mentions the word denial as a signifier for self-confession of weakness to generate a poetic energy that transcends and creates its aesthetic contextual dynamicity.

5. Conclusion

In *Maasumaa,* Scott fuses the ordinary intimate with the humanly bewildering in order to suggest that his poetics imply that human treasures of happiness, independence, and stability are engulfed in the multi-folded mystic life. *Maasumaa* poetically expresses contemporary human experience, which is imbued with realistic events, artistically charged with irony and irrationality, sarcasm and fantasy, and daily details that represent modernist characteristics. Scott's contradictory structures constitute suggestive binary oppositions manifested by good and evil, women and men, white and black, the self and the other, justice and injustice, death and life, center and margin, and love and hatred that haunt modern man.

Scott's pattern of oppositions deepens in the textual space, creating signifiers that structure the binary oppositions that intersect and collide to enrich his poetics with signifiers and signifieds. Scott's binary oppositions of presence/absence and distant and proximate suggest a sort of homogeneity of opposites, which dominate his sensible poetic discourse. Binary oppositions constitute a natural phenomenon in human life; they become a part of human vision towards the self and the other. In this sense, *Maasumaa* presents Scott's self based on external conflicts with the surrounding society.

Moreover, Scott's binary oppositions expresses his human conceptual contradictions which include heaven and earth, night and day, masculinity and femininity, east and west, north and south, and attendance and absence. They create cosmic oppositional binaries of the individual self and the other which stand in a constant conflict between presence and absence. Binary oppositions, as signifiers, have an indicative effective role in the construction of *Maasumaa,* based on the relationship of poet's self with the other. Scott's self is representative of other selves. These poetic selves are defied with unstable anxiety that pushes the poetic self to oppose love, freedom, pleasure, and tranquility, which imply, for the poet, expressions of an existential feeling of life and a genuine hatred of its annoyances. Accordingly, Scott constructs his poetics in the light of oppositional pairs of signifiers and signifieds to expose these multiple unstable themes.

Furthermore, *Maasumaa* is poetically and thematically structured on binary oppositions that express human drama, which arouses readers' desire to read and contemplate it. Such poetic mechanism creates intersections and overlap between the object and its opposite/s as both signifiers and signifieds. Also, these signifying oppositions are suggestive traces that dominate Maasumaa and create thematic indeterminacies and instabilities. Therefore, *Maasumaa* is full of contradictions, paradoxes, questions, and controversies, which create questionable texts. However, *Maasumaa* needs further multiple appreciative readings, for it embodies a very profound poetic imagination, which is creative, cultural, artistic, and impressive. Such qualities entail further creative explorations in the light of other critical theories and assumptions.

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Section 5. Philosophy

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SOCIO-PHILOSOPHICAL INTERPRETATION OF THE CONCEPTS OF SPIRITUAL SAFETY AND HISTORICAL CONSCIOUSNESS

Abstract. This article comparatively examines the philosophical views on the concept of national-spiritual safety and regional safety, the role of historical consciousness and memory, the structure of national-spiritual safety and historical consciousness, the forms of manifestation.

Keywords: safety, national safety, spiritual safety, regional safety, memory, historical consciousness, the structure of historical consciousness.

After the independence, the Republic of Uzbekistan, along with all other spheres, has set as one of its main tasks the identification of important areas for ensuring its security and stability. In this regard, the strategic importance of ensuring national and spiritual security is significant. From this point of view, every society, while the state sets ambitious goals for itself, requires the development of a unique and appropriate model of safety and stability. From the first days of independence, Uzbekistan has also developed a unique form of ensuring its safety and stability. He set himself the strategy of ensuring national and spiritual safety and inculcating it in the minds and hearts of our people. Because, as the President of the Republic of Uzbekistan Shavkat Mirziyoyev said: "As you all know, today in the world there is a fierce competition, confrontation and contradictions. Threats such as religious extremism, terrorism, drugs, human trafficking, illegal migration, and "popular culture" are growing, undermining the beliefs and family values that have existed for centu-

ries. That fact must be taken into account" [2]. The urgency of the current approach to the study of the spiritual aspects of national security is related to the emergence of social problems and needs related to the formation and maintenance of spiritual safety in the context of globalization and cultural integration. The spiritual aspects of national safety are, firstly, the ability of a nation to preserve and pass on its spiritual and cultural identity to future generations.

Secondly, it is the spiritual integration of the nation, ensuring the unity and harmony of group, individual and social interests, overcoming the gap between values and the crisis of post-transformation worldview, nihilism and anomie. According to T. Alimardonov, the perception of the culture of spiritual safety by the members of society as one of the important elements of the safety system is one of the factors strengthening the integrity of the state, sovereign independence, realization of socio-economic potential and sustainable development. The system of spiritual security is a set of ideas and values about

the culture, history, foundations of the Uzbek statehood, expressing the spirit, potential and will of the nation. The issue of spiritual safety is one of the tasks that determine the existence of a nation. It expresses the activities of integrated social systems aimed at preserving society and its culture through moral values [6,127].

In modern conditions, the spiritual development of a society is becoming one of the important factors in ensuring its national safety. Qualitative features of the spiritual world of individuals, social strata and groups determine the state of social relations in terms of their stability, dynamics of development and reproduction. The socio-philosophical analysis of the spiritual sphere as a factor of national safety is aimed at a deeper consideration of universal meanings, important features and characteristics, current events in social life. The study of social evolution, the logic of social processes, provides an opportunity to determine the dynamics of development of society in the context of changes in historical, spiritual, cultural and moral values – threats, dangers and dangers, respectively.

Indeed, as I. Islamov rightly points out, the spiritual threat is a set of conditions and factors that threaten the vital interests of the individual, society and the state in the field of spirituality. Moral threats are factors that negatively affect spirituality and cause events and processes that threaten national spiritual interests [7, 57].

The conceptual state of social philosophy allows for a structural representation of national safety in the strength of its many structures and elements. The forces (primarily state safety and public safety) together with civil society institutions will ensure the preservation of socio-historical, cultural and spiritual heritage in order to counter threats to the national safety of our country.

On this basis, the national priorities for the development of the spiritual sphere are the preservation and strengthening of moral qualities. Maintaining a system of core values opens up a wide range of opportunities for the sustainable development of man,

society and the state. In this case, moral safety involves providing the conditions for sustainable development and enabling the state to address pressing issues of economic, social and political development.

At the same time, the analysis of the state of the spiritual, cultural spheres helps to identify. This emphasizes the importance of socio-philosophical analysis, which allows citizens to study the specific forms of self-determination and self-realization, the laws and mechanisms of their conscious-will and spiritual-moral activity. Of particular interest is the individual and personal experience in defining the boundaries of self-expression in accordance with the directions of social development, making innovative changes in it, enriching the world of life, social mutual support and solidarity, the formation of human tendencies in society.

A completely new historical period has begun in the destiny of our people. This period is born as a period of healthy, vital and human interests that are just emerging through the ideas of independence. This relationship, which is emerging in the form of national independence, national idea, national philosophy, is a new assessment of our past. output, on this basis, rises to the level of a strong internal need for the formation of historical memory and historical thinking" [8, 125]

An interesting definition of "historical consciousness" is given by the well-known sociologist Y. Levada: "This concept covers the whole variety of spontaneously formed or science-created forms in which society realizes (perceives and evaluates) its past, or rather, in which society reproduces its movement in time" [4, C. 16].

Historical consciousness does not have the importance of historical space as a category of historical time in its focus as an understanding of world history, because historical space is the coexistence of historical events, and historical time is a form of change of historical events, states and so on. The backbone factor that unites different spiritual phenomena into one whole – the historical consciousness – is the historical time. In this regard, great attention is paid

to the analysis of the category of historical time, in which (ontological terms) we mean the continuity, sequence, change of historical events, processes and phenomena. The main focus is made on revealing the subjective-objective nature of historical time and the relationship between the past, present, and future; Criticism is focused only on positions that emphasize the past or the future one-sidedly.

The foundation of historical consciousness is historical memory as a stable system of thoughts about the past that exists in the public and individual consciousness; A repository of the results of different types of social subject activity and, in general, of all forms of sociality; an important link in cultural heritage. Historical memory has a complex structure and is divided into components for various reasons, namely: historical memory of an individual, social group, society (depending on the subject of the carrier); short-term and long-term memory (depending on the axis of historical time); recalling pleasant and uncomfortable periods in the history of society and people (on social and moral grounds). The past to which these memories relate may be more or less distant. Memories of him are transmitted through oral or written tradition and can be clothed in the form

of myths, can be idealized or provide an accurate description. Today this happens through training or the influence of media channels" [5, C. 133].

In conclusion, it should be noted that there are many similarities in historical consciousness and historical memory: in both cases it is a repetition of the historical process; both of these events are important, if not significant, and play a role in establishing connections in the process of cultural transmission. The differences between these phenomena and, accordingly, the concepts are as follows: a) historical memory is the basis of historical consciousness, which derives from previously developed, especially, scientific consciousness; b) historical memory is based more on the socio-psychological components and unconscious structure of the human psyche than on historical consciousness; c) historical memory can only be about the past, and historical consciousness broadly reflects history in the unity of three time regimes. Historical memory and historical consciousness are contradictory concepts. The first is broader than the second, i.e., historical memory arose before historical consciousness; the latter is broader because it applies not only to the past but also to the three time modes.

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ON THE ISSUE OF OXIDATION OF ANTIMONY (III) SULFIDE WITH ELEMENTAL SULFUR IN AN ALKALINE MEDIUM

Abstract. the existing view on the oxidation of antimony (III) sulfide with elemental sulfur in an alkaline medium is Revised and corrected, and a more realistic interpretation of the current reduction-oxidation process is presented. It was found that in a caustic alkaline environment, as a result of the oxidation of antimony (III) sulfide with elemental sulfur, instead of sodium tetratioantimonate salts and sulfuric acid salts are obtained from the same alkaline metal. Crystalline tetrathioantimonate(V) and tricontinental(V) in a molar ratio of 5: 3.

Keywords: antimony (III) sulfide, sulfur, redox processes, tetratioantimonate and metaantimonate, sodium hydroxide.

The objective of this research is to conduct a more in-depth study of the transformation of $NaOH\text{-}Sb_2S_3\text{-}S\text{-}H_2O$ system in order to establish the true direction of the ongoing redox reaction.

Introduction: Mixed synthesis of alkali metal oxothioarsenates, composed of $M_3AsO_{4-x}S_x$, where M is an alkali metal, and X changes to 1–3 is well developed [1, p. 626–641; 2–5]. In regard to the production of antimony (V), it is clear from the literature data [6] that it is

not produced under such conditions. A significant difference is observed in the formation of arsenic(V) and antimony(V) salts. For example, sodium(V) tetrathioantimonates are actually produced as follows[1; 7; 8]:

$$8NaOH + Sb_2S_3 + 6S \rightarrow 2Na_3SbS_4 + Na_2SO_4 + 4H_2O \quad (1)$$

At the same time, the main product of $NaOH - As_2S_3 - S - H_2O$ system is sodium dithioarsenate (V) [1, p. 626–641; 5].

$$6NaOH + As_2S_3 + 2S \rightarrow 2Na_3AsO_2S_2 + H_2S + 2H_2O \quad (2)$$
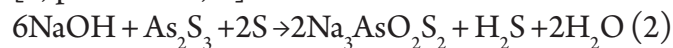
In previous publications [9; 10] we tried to use similar approach to the synthesis of sodium thioarsenate [1, p. 626–641]

$$6NaOH + As_2O_3 + 2S \rightarrow 2Na_3AsO_3S + 3H_2O \quad (3)$$
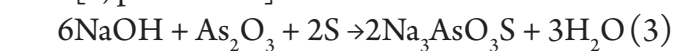
to obtain sodium thioantimonate(V) of the same metal, although our attempt to isolate the pure target product by the following chemical reaction

$$6NaOH + Sb_2O_3 + 2S \rightarrow 2Na_3SbO_3S + 3H_2O \quad (4)$$
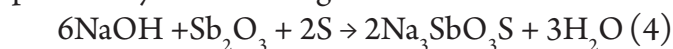
proved to be unsuccessful.

The result is sodium metaanthymonate as a solid phase and the corresponding redox reaction can be expressed by the following equation in a tetratioanthymonate solution of the same metal, taking into account experimental data:

$$6NaOH + Sb_2O_3 + 4S + 19,5H_2O \rightarrow 3NaSbO_3 \cdot \\ \cdot 3,5H_2O + Na_3SbS_4 \cdot 9H_2O \quad (5)$$
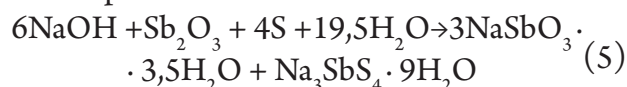
So far, sodium tetrathiantimonate(V) has been obtained by reaction (1) [1, p. 626–641], without considering the solid phase of its reaction mass, as it was believed to represent a homogenous mixture of antimony sulfide(III) and sulphur waste. But in the course of our research we noticed [11] that this mixture was markedly different from sulphuric acid and especially from shades of trivalent antimony.

This fact, as well as the difference in the above chemical reactions of antimonychloride chalcogenides(III), gave us a reason to test the reaction (1), although the hydrochemical method has long been considered to be the main method of producing sodium tetrathioantimonate(V) [8; 12].

Experiment:

Example 1. In an Erlenmeyer flask with a capacity of 250 ml 13.3 ml. 10 N solution of caustic alkali was poured and under constant stirring, a well-shredded homogeneous mass of 10 g of antimony sulfide(III) and 1.8 g of sulfur was added. The volume of the suspension was filled with 70 ml distilled water and heated at (90–100 °C), then filtered, the sludge was washed several times with distilled water and dried in air until a constant mass was obtained. We received 5.58 g of sodium metaantimonate (V) in the form of light grey powder, which is 99% – theoretical weight found,%: Sb 47.45; H_2O 24.81. $NaSbO_3 \cdot 3.5H_2O$, **calculated,%:** Sb 47.60; H_2O 24.63.

96% ethyl alcohol was added to the reaction mass of filtrate and kept for a day. The next day, the resulting coarse crystal mass was filtered, washed with ethyl alcohol and dried in a vacuum-exicator until it reached a constant mass on paraffin and phosphorus pentaoxide. 15.75 g of sodium tetrathioantimonate in the form of a colorless crystal was obtained, which is 89.0% of the theoretical mass found: Sb 25.18; H_2O 33.85. $Na_3SbS_4 \cdot 9H_2O$. calculated,%: Sb 25.32; H_2O 33.69

Example 2. Out of 10.6 gr of sodium alkali, 20 gr. of Sb_2S_3, 3.7 gr S and 100 ml water of the prepared suspension under these conditions obtained 11.28 gr. of $NaSbO_3 \cdot 3,5H_2O$ (100% of the theoretical mass) and 32.74 g $Na_3SbS_4 \cdot 9H_2O$ (92.5% of the theoretical mass).

Antimony was determined by the Evans method [13], the content of crystallisation water was determined by the weight method [14], in the latter case the sample of the analysed substance is heated in a drying cabinet at 110–190 °C until it reaches a constant mass.

Experiment discussion: Experiment discussion: In order to achieve our goal, we have, among other things, verified the reliability of the oxidation reactions of antimony sulfide (III) by the chemical reaction elemental sulfur method[1, p. 626–641]. For this purpose, we took the reactive substances in the following molar ratio NaOH: Sb_2S_3: S = 8 : :1 : 6. The authors of this method [1, p. 626–641.] note that "the solution is filtered in a corrugated fil-

ter and evaporated before crystallization", but they say nothing about what remains on the filter. If the starting substances were taken in the ratio as given in reaction (1), then there would be no precipitation on the filter, as all products of this reaction are well soluble in water.

Although, in spite of this, the interaction of the raw materials actually produces a solid phase, which has been separated by the filtering. Analysis of this filtrate has shown that the substance under study represents sodium methantimonate (V), which has led to a lack of confidence in the interpretation of the reaction in this way.

We were convinced of the correctness of our considerations, especially after a filtrate test. It turned out that there was no sodium sulfate in the solution, which ultimately convinced us that (1) the expression of the reaction in this way is not true.

Based on a study of the substances obtained (detection, elemental analysis), we concluded that the reaction of oxidation of antimony sulfate by elemental sulfur in an alkaline environment can be represented by the following equation:

$$18NaOH + 4Sb_2S_3 + 8S + 46,5H_2O \rightarrow 5Na_3SbS_4 \cdot 9H_2O + 3NaSbO_3 \cdot 3,5H_2O \qquad (6)$$
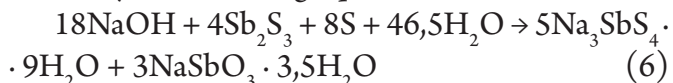
The process of the above mentioned reaction of this type can be easily explained by the semi-reaction method. By the electronic ion method, it is possible to present the reaction of oxidation of antimony sulfide with elemental sulfur in a sodium hydroxide environment using the following equation:
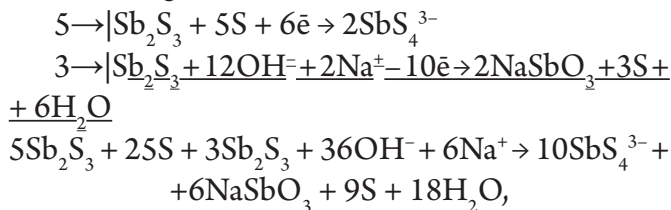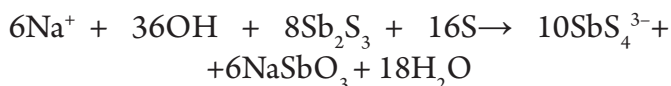
$$Na^+ + OH^- + Sb_2S_3 + S + \cdots \rightarrow NaSbO_3 + 3Na^+ + SbS_4^{3-} + H_2O + \cdots$$
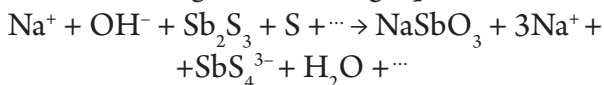
The sulfur recovery process equation:

$$Sb_2S_3 + 5S + 6\bar{e} \rightarrow 2SbS_4^{3-}$$
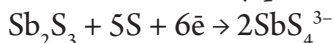
the process of oxidation of antimony sulfide is comparatively more complex and can be presented in equation:

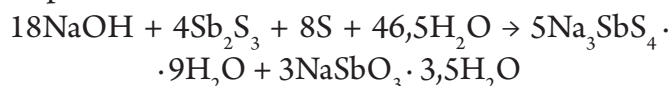$$Sb_2S_3 + 12OH^- + 2Na^+ - 10\bar{e} \rightarrow 2NaSbO_3 + 3S + 6H_2O$$

The number of electrons acquired during the recovery process is equal to the number of electrons given during oxidation at a ratio of 6:10=3:5. Taking this ratio into account and summing up the oxidizing and reducing reactions we obtain:

$$5 \rightarrow |Sb_2S_3 + 5S + 6\bar{e} \rightarrow 2SbS_4^{3-}$$
$$3 \rightarrow |Sb_2S_3 + 12OH^= + 2Na^\pm - 10\bar{e} \rightarrow 2NaSbO_3 + 3S + 6H_2O$$
$$5Sb_2S_3 + 25S + 3Sb_2S_3 + 36OH^- + 6Na^+ \rightarrow 10SbS_4^{3-} + 6NaSbO_3 + 9S + 18H_2O,$$

or:

$$6Na^+ + 36OH^- + 8Sb_2S_3 + 16S \rightarrow 10SbS_4^{3-} + 6NaSbO_3 + 18H_2O$$

The resulting ion equation in molecular form can be presented as follows:

$$18NaOH + 4Sb_2S_3 + 8S + 46,5H_2O \rightarrow 5Na_3SbS_4 \cdot 9H_2O + 3NaSbO_3 \cdot 3,5H_2O$$

In order to better understand the technical solution to a given task, we give specific examples.

Conclusion: The existing view on [1; 7; 8] oxidation of antimony sulfide (III) by elemental sulfur in an alkaline medium was thus revised and a more realistic interpretation of the current redox process was given.

It has been found that in a caustic alkaline medium as a result of oxidation of antimony sulfide (III) with elemental sulfur, tetrathioantimonate (V) and trioxoantimonate (V) crystalline hydrates in a molecular ratio of 5: 3 are obtained instead of sodium tetrathioantimonate and sulfuric acid salts.

Finally, it should also be noted that the importance and significance of the above research can be explained by the fact that the issues of antimony oxidation, ecology and health safety are still extremely relevant to researchers, which is evident from the numerous studies currently being carried out worldwide in various research and educational institutions [15; 16; 17; 18; 19].

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