

**X-RAY STRUCTURAL SYNTHESIS AND ELEMENTAL ANALYSIS OF COMPLEX COMPOUNDS OF
THIOSEMICARBAZONE METHYL ETHYL KETONE WITH MOLYBDENUM****Gulbayev Yakhshilik Irsalievich**

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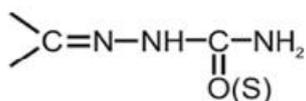
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Abstract: Semicarbazone derivatives are known to be involved in many biological processes and show stimulating and herbicidal activity in seeds of plants and grain crops depending on the amount of dose used. Molybdenum, on the other hand, is of great importance in the life of plants. This element plays an important role in the protein synthesis and metabolic processes of nitrogen compounds in plants. In addition, Molybdenum is necessary for the normal absorption of atmospheric nitrogen by legumes.

Key words: Synthesis, semicarbazone parabenzoaldehyde, thermal stability, composition, individuality, physicochemical methods of analysis.

The rapid development of the chemistry of coordination compounds of metals with organic ligands containing n, o, s depends on their very wide range of action as biologically active compounds, analytical reagents and catalysts used in the chemical industry.



Among organic compounds, derivatives of thiosemicarbazones containing fragments occupy a special place.

Interest in the structure of this ligand is due to its presence in various tautomeric forms. The presence of various donor nitrogen, oxygen, sulfur and radicals in the fragment significantly affects the complexation process, and depending on the electronic structure of the metal, ligands of one or another tautomeric form are stabilized.

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compounds in plants. In addition, Molybdenum is necessary for the normal absorption of atmospheric nitrogen by legumes.

In agriculture, the use of molybdenum in combination with organic matter ensures the preservation of phosphorus in the soil during the entire growth period of plants. The literature describes an increase in the biological activity of complexes in relation to the overall biological effect of the initial components due to synergistic effects.

To synthesize Mo (VI) dioxocomplex with methyl ethyl ketone-thiosemicarbazone, 2.41 g (0.01 mol) of sodium molybdate was obtained, dissolved in 50 ml of distilled water, 2.90 g (0.02 mol) of methyl ethyl ketone thiosemicarbazone dissolved in 50 ml of distilled water. The resulting mixture was heated to 80-85 °C with intensive stirring. After 0.5 hours, the solution became cloudy and turned blue, pH-12. the pH of the solution was brought to neutral, concentrated HCl drops were added, The Color of the solution turned brown. After 3 days, a sediment fell on the bottom of the glass, which was filtered and dried at room temperature. The reaction yield was 81%.

The synthesis of the $[MoO_2(C_4H_8N_3H_4CO) \cdot Cl \cdot 2H_2O - Mo(VI)]$ complex with methyl ethyl ketone semi-carbazone was done as follows: 0.01 g (50 mol) of sodium molybdate dissolved in 2.41 ml of distilled water. The resulting solution was added to 50 ml of distilled water with a solution mixture consisting of 3.30 g (0.002 mol) of half-carbazone methyl ethyl ketone hydrochloride. After 0.5 hours, the mixture of solutions obtained in intensive mixing was heated to 75-80°C.

Molybdenum synthesis was carried out in accordance with the analysis of compounds. Nitrogen was found by activating carbon and hydrogen in the oxygen stream by the Dumas method. The results of the elementary analysis of coordination compounds of molybdenum (VI) dioxocomplex with methyl ethyl ketone thiosemicarbazones are shown in Table 1. An X-ray was performed on the SI Drone-2.0 anticatode to determine the specificity of the synthesized compounds.

Table 1.

Results of elementary analysis of complex compounds of molybdenum (VI) dioxo complex with thiosemicarbazone methyl ethyl ketone.

Interaction	Elements as a percentage									
	Me, %		C,%		H,%		N, %		S,%	
	Found	Calculated	Found	Calculated	Found	Calculated	Found	Calculated	Found	Calculated
MoO ₂ (TCKMƏK) ₂ H ₂ O	23.42	22.62	27.61	28.57	5.91	5.24	21.42	20	8.62	8.33

[MoO ₂ (C ₄ H ₈ N ₃ H ₄ CO) ₂] ci ₂ -2H ₂ O	18.17	18.43	40.06	40.41	5.81	5.50	16.51	16.91	5.48	6.21
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Comparing intermediate distances and relative intensities, Mo (VI) showed that dioxocomplex, thiosemicarbazone, methyl ethyl ketone and their coordination compounds differ from each other in New complex compounds, as well as the original components, so compounds have an individual crystal lattice (fig.1, 2).

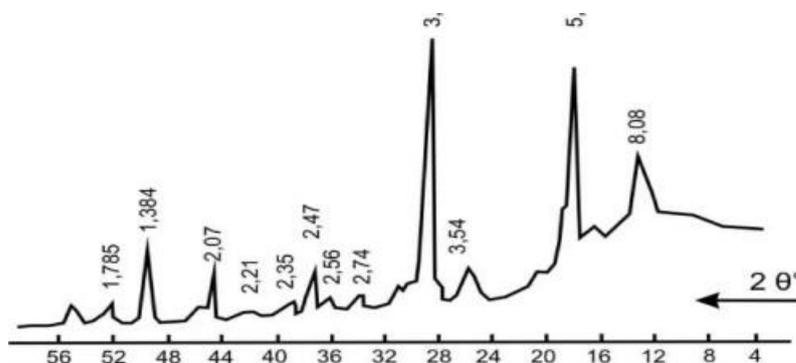


Image: 1. X-ray of methyl ethyl ketone thiosemicarbazone molecule.

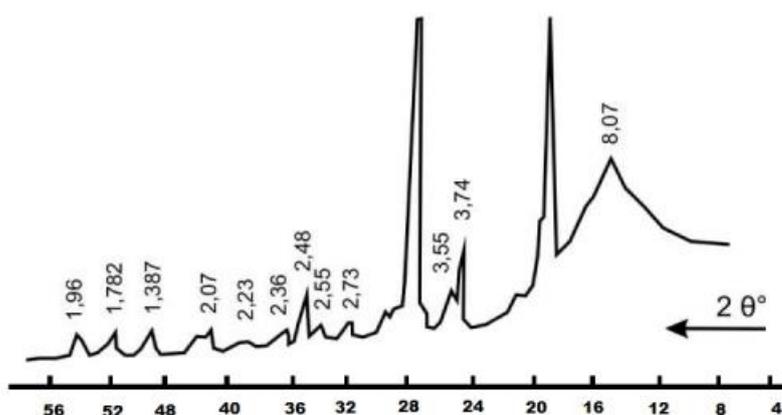


Image: 2. X-ray of thiosemicarbazone methyl ethyl ketone molecule with molybdenum.

In the complex formation process, the thiohydrazide part of the ligands is reassembled into semi - carbazone molecules-that is, when the complex-forming cation approaches, the P-bonds of the C

= S group are disconnected, and at the same time the Proton of the double amine group is transmitted, and the sulfur atom and the molybdenum ion.

In the first, conditions were developed for the synthesis of thiosemicarbazone methyl ethyl ketone with molybdenum (VI). X-ray phase, vibration spectroscopy, methods for coordination of thiosemicarbazone and methyl ethyl ketone molecules with molybdenum(VI), and thermal motion of synthesized compounds are determined.

The results obtained can be used for the synthesis of coordination compounds of other organic ligands and D-metals, as well as serve as a guide for fellow scientists and those working in the field of coordination chemistry.

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