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Biological Activity of the Coordinating Compound of Qinazolin-4-One with Nickel-(II) Nitrate Hexahydrate

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Annotation: We performed the following processes in the study of the biochemical effects of the coordination compound formed with nickel (II)-nitrate and quinazolin-4-one on the "amber" variety of the Phaseolus aureus plant.

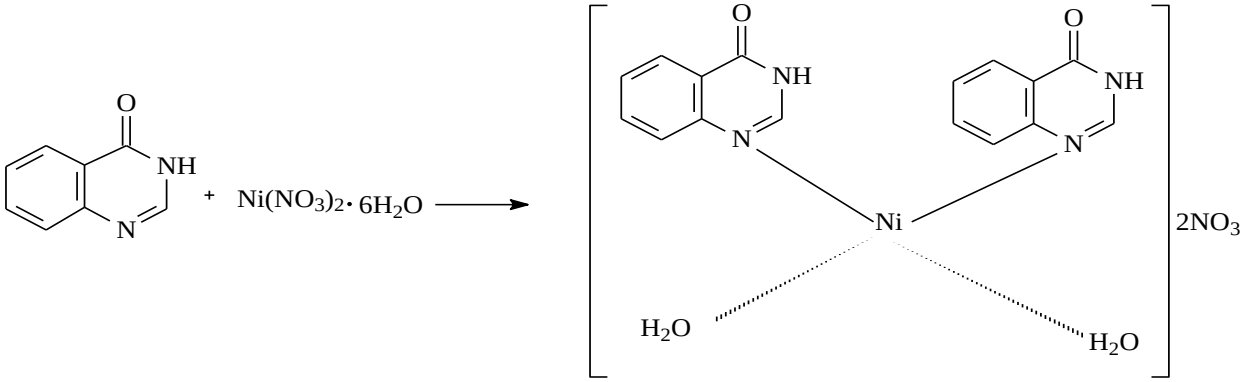
Key words: coordination compound, quinazolin-4-one, nickel-(II) nitrate hexahydrate, anthranilic acid, biochemical effects, "amber" variety of the Phaseolus aureus plant.

Introduction

The ideas about the possibility of the existence of "additional valences", which arose in the study of quaternary amines, Werner also applies to "complex compounds". In his 1891 article "On the Theory of Affinity and Valence", Werner defines affinity as "a force emanating from the center of the atom and spreading uniformly in all directions, the geometric expression of which is thus not a certain number of principal directions, but spherical surface. Two years later, in the article "On the Structure of Inorganic Compounds," Werner put forward a coordination theory, according to which complex-forming atoms form the central nucleus in inorganic molecular compounds. Around these central atoms are arranged in the form of a simple geometric polyhedron a certain number of other atoms or molecules. The number of atoms grouped around the central nucleus, Werner called the coordination number. He believed that in a coordination bond there is a common pair of electrons that one molecule or atom gives to another. Since Werner suggested the existence of compounds that no one had ever observed or synthesized, his theory was distrusted by many famous chemists, who believed that it unnecessarily complicates the understanding of chemical structure and bonds[1-8]. Therefore, over the next two decades, Werner and his collaborators created new coordination compounds, the existence of which was predicted by his theory. Among the compounds they created were molecules that showed optical activity, that is, the ability to deflect polarized light, but did not contain carbon atoms, which were believed to be necessary for the optical activity of the molecules[9-15].

Methods and results

In a 100 ml round-bottomed flask, 50 ml of the absolute solvent acetonitrile was added, then nickel(II)-nitrate hexahydrate and quinazolin-4-one were added. The reaction mixture in a water bath was heated at 90°C. A dark green precipitate formed and the composition of the masses was studied by chromatography.



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Experimental Part

We performed the following processes in the study of the biochemical effects of the coordination compound formed with nickel (II)-nitrate and quinazolin-4-one on the "amber" variety of the Phaseolus aureus plant. We learned that Ni^{2+} microelement is of great importance in the assimilation of molecular nitrogen contained in the atmospheric air through plant roots in the soil and the formation of nodule bacteria, and based on this compound, we received a certificate of authorship. In addition, the heterocyclic compound in our synthesized compound II has a pyrimidine ring. The expected results in our experiment consist of the following steps.

1. 2.5% and 5% solutions of product II in distilled water were prepared as a result of the experiment.
2. 20 seeds were cooled in a 2.5% solution for 5 hours and 10 hours.
3. 20 seeds were cooled in a 5% solution for 5 hours and 10 hours.

Effect of the obtained substance II on seed germination.

The seeds were placed in a thermostat in 4 petri dishes and 1 sample of 20 pieces, a total of 5 petri dishes. Temperature 27°C, humidity 40%. The growth processes of seeds soaked in 2.5% solution for 5 hours were observed compared to those of 10 hours, the growth processes of seeds soaked in 5% solution for 5 hours were observed compared to those of 10 hours. This is how the speed of root growth was achieved.

We believe that it is appropriate if the seeds are soaked in a 2.5% solution for 5 hours in the suspension of the root.

Conclusion

In conclusion, we should say that this complex organic compound plays an important role in hemopoiesis processes. In plants, cobalt is a necessary trace element for assimilation of molecular nitrogen, it helps the formation of nodule bacteria in the root system of legumes. Cobalt accumulates in the wood of the plant, accelerates its growth, participates in the exchange of auxin, that is, it is an important nutrient for the growth processes of plants (including the elongation of cell membranes).

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