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SYNTHESIS OF AMINOPYRIDINE DERIVATIVES BASED ON GOSSYPOL

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Abstract: *Physicochemical properties of gossypol, their Schiff bases and metallocomplexes were synthesized. When synthesizing derivatives of Schiff's bases, gossypol and primary chiamin are taken in a 1:2 mol ratio, enough 96% ethyl alcohol is poured for its dissolution and stirred for three hours while heated in a magnetic stirrer. Structures of all obtained substances were analyzed using IR and UV spectra.*

Key words: *Gossypol, amino compound, Schiff's base, spectrum, biologically active substance, metallocomplex, polyphenol, triterpene, aldehyde, cotton plant, naphthalene.*

Introduction

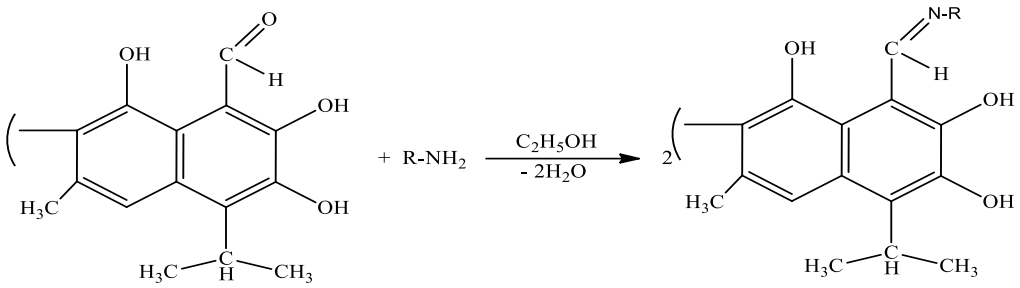
Currently, one of the main problems is the synthesis of substances with new biological activity based on natural compounds extracted from local plants and their application to various sectors of the economy.

The use of gossypol in cotton has led to the creation of a number of drugs. Gossypol itself and most of its derivatives are known to have interferon-inducing properties. Therefore, obtaining the Schiff bases of heterocyclic compounds with gossypol and isolating those with high biological activity from them, and then creating drugs for their use in the field of medicine, is one of the urgent problems of bioorganic chemistry, chemistry of natural and physiologically active compounds.

Therefore, the main goal of this work is to synthesize Schiff's bases with some aminopyridine compounds based on gossypol and to determine their structure using IR and PMR-spectra, to obtain their metallocomplexes with Ni(CH3COO)2* 4H2O in order to increase the biological activity of the obtained substances.

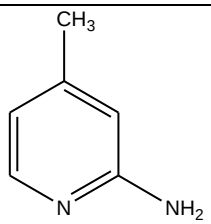
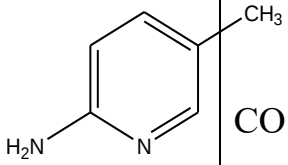
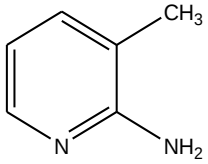
When studying the physico-chemical properties of all the synthesized substances, it became clear that all the substances formed are crystalline substances from yellow to brown.

The reaction was carried out according to the following scheme:



Some of the physicochemical constants of the new synthesized compounds are presented in the following tables.

Synthesis of kilingan oxypolningazomethine derivatives and their derivatives some physicochemical constants

Compound	Radical - R	Solvent	Liquid ^{0}C	R_f	Reaction product	
					gr	%
(I)		ДМСО CDCl$_3$	284-85	0,18* 0,36**	0,2	74,2
(II)		ДМСО CDCl$_3$	285-86	0,22* 0,42**	0,21	74,3
(III)		ДМСО CDCl$_3$	283-84	0,14* 0,29**	0,17	61,2

System: *1 – Hexane : Acetone (4 : 1) **2 – Hexane : Acetone (2 : 1)

In order to verify the structure of the obtained substances, the following results were obtained when UV and IR spectra were taken and analyzed.When the UV spectrum of pure substance 2-amino-4-methyl pyridine was obtained, it gave absorption maxima at 204.04, 236.60, 292.50 nm. When examining the UV spectrum of the Schiff base of gossypol formed with 2-amino-4-methyl pyridine, it gave absorption maxima at 204.07, 239.92 and 315.74, 462.38 nm for this substance.

When the IR spectrum of the pure substance 2-amino 4-methyl pyridine was analyzed, the following results were obtained. Accordingly, due to the valence vibration of the $–NH_2$ group at 3240-3430 cm^{-1}, due to the valence vibrations of the –C=C– bond at 1420-1600 cm^{-1}, due to the valence vibrations of the –N=C– bond at 1250-1310 cm^{-1} and 540-1080 in cm^{-1} gave absorption maxima due to valence vibrations of the Ar-CH_3 bond.

When analyzing the IR spectrum of the Schiff base formed by gossypol with 2-amino 4-methyl pyridine, we can see obvious changes in the area of absorption maxima belonging to the $–NH_2$ group at 3240-3430 cm^{-1}. In the Schiff base, we can see that the surface and the distance between these peaks have expanded. These expansions occur at the expense of Schiff-based hydrogen bonds. As a result, we can see absorption maxima at 2960 cm^{-1} due to valence vibrations of the new –N=CH– bond.

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