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PREPARATION OF SUPRAMOLECULAR COMPLEXES OF MONOIZOPROPYLIDEN LAGOXYLINE WITH GK, GKMAT AND GKMKT.

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Annotation: *In this thesis, diterpenoid lagochilin (LG) was isolated from Lagochilus inebrians plant according to the method known in the literature, and its monoizopropylidene (MIPL) derivative was synthesized on the basis of lagochilin. It is reported that supramolecular complexes of monoizopropylidene lagoxylin were obtained for the first time with glycyrrhizic acid (GK) and glycyrrhizic acid monoammonium (GKMAT), glycyrrhizic acid monopotassium (GKMKT) salts isolated from the dark extract of the root of Glycyrrhiza glabra L. and their physicochemical properties and spectral properties were studied. .*

Key words: *lagochilus inebrians, lagochilus pubescens, Glycyrrhiza glabra, infrared spectroscopy, lagoxiline, monoizopropylidene lagoxiline, glycyrrhizic acid, monopotassium salt of glycyrrhizic acid, monoammonium salt of glycyrrhizic acid, thin layer chromatography, hemostatic activity.*

INTRODUCTION.

The plant Lagochilus inebrians has long been known in folk medicine for its blood-stopping properties, and decoctions and tinctures based on the plant Lagochilus have been used in folk medicine to stop various bleedings. The pharmacology of Lagochilus plant species was studied at the pharmacology departments of the Kuban, Samarkand, Andijan medical universities. Among them, aqueous and alcoholic decoctions of Lagochilus inebrians have been found to have physiologically active properties such as sedative, hypotensive, sedative, anti-shock, anti-radiation and anti-allergic (anti-allergic) in addition to hemostatic properties. Lagochilus inebrians plant. The main active ingredient of the Lagoxilus

plant is the diterpenoid lagoxilin, which is a tetrahydric alcohol. The plant contains a small amount of lagoxilin, mainly in the form of various acetyl derivatives. When it is extracted with alkali, they are hydrolyzed to free lagoxin. [1-7].

Based on the method known in the literature, in order to isolate Lagoxilin from the plant Lagochilus inebrians, the plant was crushed and sprayed with a 20% solution of alkali (sodium hydroxide), and after drying, it was extracted in a dichloroethane solvent. After the dichloroethane solution was concentrated by filtration, it was cooled in a refrigerator and the technical lagoxiline crystals were isolated. Technical lagoxiline was purified by recrystallization in acetone. The average yield of lagoxiline was around 1.7-1.8%. The resulting Lagoxilin is dissolved in acetone, distilled water and concentrated sulfuric acid are added to pH=3-4, the mixture is placed in a separatory funnel and extracted with cyclohexane 4 times from 100 ml. The cyclohexane solutions were combined and washed with 5% sodium bicarbonate solution. It is neutralized and the solvent is removed, and the solution is washed in a column with silica gel in the ether-benzene 15:1 system. We mix monoisopropylidene lagoxylin coldigy in ether-benzene 15:1 system and put it in the column. We mix the fractions that came out in the column and perform chromatography. We mix fractions with the same Rf value in the tetrachloromethane-acetone 7:5 system. it is recrystallized in ether, for this we heat monoisopropylidene lagoxylin with ether until it dissolves in a reflux condenser, pour the solvent into the refrigerator and form a white crystal, filter it, wash it with absolute ether, and dry it to obtain monoisopropylidene lagoxylin. Lagoxiline reacts with acetone in the presence of anhydrous copper sulfate to form 3,18-O-izopropylidenelagoxiline. In the IK-spectrum of monoisopropylidene lagoxyline, the valence vibration frequencies of the OH groups in the molecule were observed in the intensive state at 3490, 3375 cm–1, the valence vibration frequencies of the CH_3, CH_2 groups appeared at 2932, 2878 cm^{-1}, CH_3 at 1471, 1453, 1382, 1369 cm^{-1}, CH_2, CH groups deformational vibration frequencies were observed, symmetric valence vibrations of epoxide ring at 1207 cm^{-1}, frequencies characteristic of their asymmetric vibrations were observed at 941 cm-1, and deformational vibrations of this ring were observed at 863 cm^{-1}. At 1101-1050 cm^{-1}, the valence vibration frequencies of C-O-C, C-OH bonds in the molecule are observed in an intense state.

Supramolecular complex compounds of GK salts with monoizopropyliden lagoxylin in molecular ratios of 1:2, 1:4, 1:9 were obtained. Supramolecular complex compounds of 1:2, 1:4, 1:9 molecular ratios of GK obtained with monoizopropylidene lagoxyline are white amorphous powders, well soluble in

water. Supramolecular complex compounds of GKMAT obtained with monoizopropyliden lagoxyline in molecular ratios of 1:2, 1:4, 1:9 are pale yellow amorphous powders, well soluble in water. The angle of deflection of the plane of the polarized light beam $[\alpha]_D$ was determined. They are optically active compounds, substances that bend the plane of polarized light. The obtained supramolecular complex compounds were characterized by some physicochemical and spectral parameters. In the IK spectrum of supramolecular complex compounds of GKMAT obtained with monoizopropylidene lagoxylin in molecular ratios of 1:2, 1:4, 1:9, valence vibrations of the carbonyl group of GK and acetyl lagoxylins in the region between 1740-1725 cm^{-1} and hydrogen bonds in the region between 3400-3250 cm^{-1} it was observed that the valence vibrations of the hydroxyl groups involved in the formation are manifested in the form of a broad shoulder, and the deformation vibrations of the methyl groups are manifested in the region between 2935-2925 cm-1. In the study of the structure of all obtained supramolecular complex compounds, physical methods based on the interaction of organic molecules with electromagnetic light, in particular, their IR- (vibrational spectrum of atoms in the molecule, l=10-4-10-2 cm) spectrum and UB- (energy state of electrons in the outermost level) electronic spectrum based on the change, l=10-6-10-4 cm) spectra were widely used. With the help of these methods, it is possible to draw conclusions about new interactions and bonds based on the differences in the spectrum of the starting substances and supramolecular complexes. In the analysis of the structure of supramolecular complexes, their UB and IK spectrum data were used.

In the UB spectrum, the intense absorption maximum value corresponding to the p-p* transition of C=O conjugated with the double bond in the C ring of GK and its salts is observed at a wavelength of 250-251 nm in the near UB region in the water:ethanol (1:1) system. Since monoizopropylidene lagoxyline does not have a chromophore group, it does not show absorption in the UB spectral region.

In the IK spectrum of compounds synthesized with monoizopropylidene lagoxylin based on GK and its salts, in the field of vibrations of functional groups, the valence vibrations of the carbonyl group of the carboxyl groups, which do not participate in the formation of hydrogen bonds of GK, show 1734-1726 cm^{-1}. The valence vibrations of the carbonyl group in the carboxyl groups involved in the formation of hydrogen bonds of GK and its mono salts are observed in the range of 1660-1632 cm^{-1}. It is observed that the vibrational frequencies of the carbonyl groups in the starting materials shift to a lower frequency range of 72-67 cm^{-1}, which in turn indicates their participation in the formation of hydrogen bonds. In the

high-frequency range of the IK spectrum, it is observed that the valence vibrations of the hydroxyl groups in positions 15, 16 of monoisopropylidene lagoxylin appear in the relatively low frequency range of 3420-3410 cm^{-1}. It is observed that the melting point of synthesized complex compounds also goes away with decomposition. Furthermore, complex compounds were characterized by thin layer chromatography, such as /α/D.

Based on the change of the fundamental vibration frequencies of the functional groups in the IK spectra of the initial substances, it is possible to judge what kind of interactions exist between molecules in the formation of molecular complexes. In particular, the valence vibration frequencies of the OH group in the GKMKT molecule were shown at 3390 cm^{-1}, and in the complex at 3367 cm^{-1} The difference in valence vibration frequencies of OH groups by 23 cm^{-1} indicates the formation of hydrogen bonds in the complex. In addition, the fact that this area has a broad shoulder indicates the presence of ion-dipole interactions between molecules. In the 1039 cm-1 bands, the valence vibration frequencies of the C-O-C and C-OH bonds in the GKMKT molecule were observed in an intensive state, and the vibration frequencies of these bonds in the complex were observed in the 1082, 1044 cm-1 bands, due to the formation of hydrogen bonds between these groups during the formation of the complex. indicates. In addition, the valence vibration frequency related to the epoxy ring in monoisopropylidenelagoxylin in the complex was observed in the region of 1214 cm^{-1}[8-10].

CONCLUSION

1. Supramolecular complex compounds of GK, GKMAT, GKMKT with molecular ratios of 1:2, 1:4, 1:9 were obtained with monoizopropylidene lagoxyline.

2. Some physicochemical parameters, IK spectra of supramolecular complexes of GK, GKMAT and GKMKT salt with monoizopropyliden lagoxyline were studied.

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