SYNTHESIS OF NEW DERIVATIVES OF LAGOCHILIN WITH SOME DICARBOXYLIC ACIDS

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According to the information of folk medicine, 502 plants have been studied as hemostatic plants, which comprise 268 genera and 97 families. A number of biologically active compounds were isolated from the plant Lagochilus inebrians Bge, a representative of the Lamiaceae family, whose aqueous decoctions and tinctures are used for various bleedings, colds, and allergies, and their physicochemical parameters and spectral properties were studied[1]. The plant contains diterpenoids, alkaloids, flavonoids, vitamin K and other secondary substances. Diterpenoids have hemostatic, hepatoprotective, anti-allergic and other properties according to their biological activity. It is also shown in the literature that the main biologically active substance of the plant Lagochilus inebrians Bunge is diterpenoid lagochilin (3,16,17,18-tetrahydroxy 9,13-epoxylabdan). Today, it is important to search for anticoagulants and hemostatic agents among the derivatives of 1,4-dicarboxylic acid, because in the literature there is information that amides and hydrazides of carboxylic acid have hemostatic and anticoagulant effects [2]. Phthalic acid amides and hydrazides phthalic anhydride or tetrachlorophthalic acid is obtained using known methods [3]. Dicarboxylic acids are also important in plant life. They have not only direct, but also secondary effects. In particular, the immunobiological activity of terpenes helps to activate the process of phagocytosis, and together with succinic acid, it improves cellular and humoral control of neutrophils and macrophages. Based on these data, we aimed to carry out the chemical synthesis of 3,16,17,18-tetrahydroxy 9,13-epoxylabdan, which is the main component of the plant Lagochilus inebrians Bunge, with some representatives of a number of dicarboxylic acids, especially phthalic, glutaric and succinic anhydrides. The chemical synthesis of lagochiline with dicarboxylic acid anhydrides was carried out in absolute pyridine medium at the boiling temperature of pyridine. The progress of the reaction was checked by the HPLS method. After the reaction was complete, pyridine was neutralized in cold hydrochloric acid solution. Some physicochemical parameters of the synthesized substances were studied. Lagochilin -mono,-di,-tri,-tetra derivatives have light yellow oily nature, are insoluble in water. In our work, we took their sodium salts in order to ensure good solubility of complex esters in water. In addition, some physicochemical parameters of the synthesized compounds were studied. Among them, the sodium salt of lagochilin tetraphthalate has -ON valence vibrations in the IR-spectrum at 3400-3000 cm-1, the valence vibration of the methylene (–CH2) group contained in the molecule of lagoxilin and phthalic acid residue is in the range 3095-3075 cm-1, and the -C–O–C- group deformation vibrations and valence vibrations of the benzene ring appeared in the region of 1450-1250 cm-1. Valence vibrations of C=O groups in the Lagochilin tetraphthalate molecule

were clearly demonstrated in the region of 1720-1600 cm-1. The obtained samples were also studied by UV-spectroscopy method. When we look at the UV spectrum analysis of sodium salt of lagochiline ester based on phthalic anhydride, an intense absorption maximum corresponding to the n→p* transition in the UV spectrum of phthalic anhydride appears in the water:acetonitrile (1:1) system at wavelengths of 238 and 293 nm. A "hypsochrome" shift from 293 nm to 11 nm was observed in the UV-spectrum of the sodium salt of Lagochiline tetraphthalate, a "hyperchromic" effect was observed simultaneously with a "hypsochrome" shift of 6 nm at the absorption maximum at 238 nm. Based on observed hypsochromic shifts in the UV spectrum and the increase in optical density due to the formation of a new product as a result of the chemical reaction, i.e., the "hyperchromic" effect, we can conclude that the tetraphthalate derivative of lagochiline was formed. In conclusion, a number of complex esters of diterpenoid lagochilin with phthalic anhydride were synthesized and made water-soluble. In our next work, it is planned to study their acute toxicity and biological activity.

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