3. *Tret'yakova E. V., Zakirova G. F., Salimova E. V., Kukovinets O. S., Odinokov V. N., Parfenova L. V.* // Med. Chem. Res. 2018. Vol. 27. P. 2199–2213.

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L. A. Yakovishin, E. N. Korzh

Sevastopol State University,
299053, Russia, Sevastopol, University St. 33,
chemsevntu@rambler.ru

NEW SUPRAMOLECULAR COMPLEX OF QUERCETIN WITH TRITERPENE GLYCOSIDE ALPHA-HEDERIN*

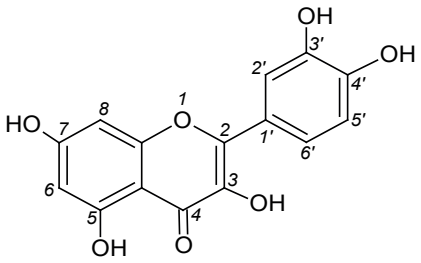
Keywords: molecular complex, alpha-hederin, quercetin, FT-IR spectroscopy.

Quercetin (Quer) is a widely known flavonol [1]. Quer has antioxidant, anti-inflammatory, antispasmodic, and other activities. It was found in grapes and other plants [1, 2]. Triterpene glycoside alpha-hederin (a-hederin, hederoside C, tauroside E, kalopanaxsaponin A, helixin, hederagenin 3-*O*-a-L-rhamnopyranosyl-(1→2)-*O*-a-*L*-arabinopyranoside, Hed) is present in the most species of the ivy genus Hedera L. and Kalopanax Miq. (Araliaceae Juss.). Hed has antitumor, molluscicidal, antifungal, anthelmintic, and antileishmanial activity [3].

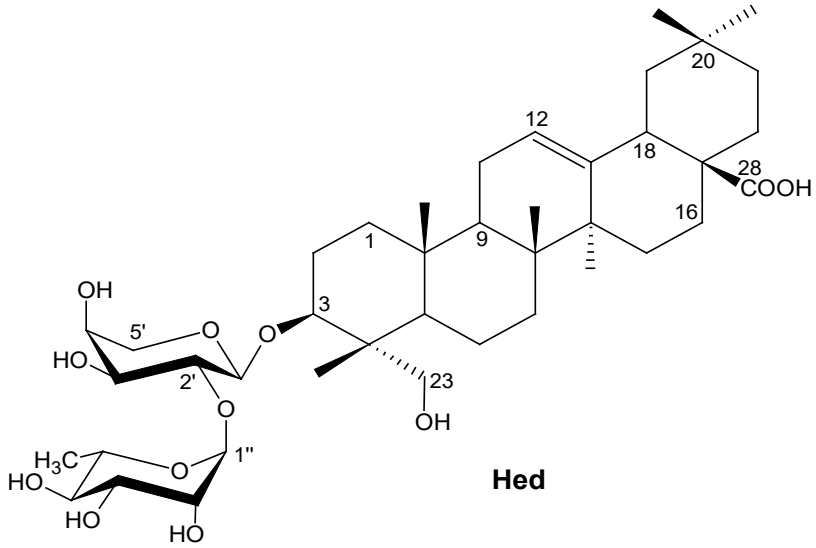
Triterpene glycosides are an amphiphilic multidentate ligands [4, 5]. Molecular complexes of different triterpene saponins with drugs and biologically active molecules has been studied [4, 5]. It has been established that the solubility, bioavailability and stability of drugs can be increased due to their molecular complexation with triterpene glycosides [4, 5].

Previously, we have prepared the molecular complex of Quer with triterpene glycoside glycyram (monoammonium salt of glycyrrhizic acid) [6]. However, molecular complex of Quer with triterpene glycoside Hed is not described. Molecular complexation between Quer and Hed can expand the spectrum of their biological activity.

The 1 : 2 composition of molecular complex of Quer with Hed was determined by the isomolar series method. Such ratio was obtained for clathrate complexes of Hed, glycyrrhizic acid, and monoammonium salt of glycyrrhizic acid with several drugs [4, 5]. Quer molecule is possibly situated in a cavity formed by two Hed molecules.



Quer



Hed

The complexation of Quer with Hed was studied by ATR FT-IR spectroscopy. The hydrogen bonds of types –(H)O···H–O– and –C=O···H–O– are formed in the molecular complex.

References

1. *Boots A. W., Haenen G. R. M. M., Bast A.* // Eur. J. Pharmacol. 2008. Vol. 585. P. 325–337.
2. *Auger C., Teissedre P. L., Gérain P., Lequeux N., Bornet A., Serisier S., Besançon P., Caporiccio B., Cristol J. P., Rouanet J. M.* // J. Agric. Food Chem. 2005. Vol. 53. P. 2015–2021.
3. *Hostettmann K., Marston A.* Saponins. Cambrige: Cambrige University Press, 1995.
4. *Yakovishin L. A., Grishkovets V. I.* // Stud. Nat. Prod. Chem. 2018. Vol. 55. P. 351–383.
5. *Tolstikov G. A., Baltina L. A., Grankina V. P., Kondratenko R. M., Tolstikova T. G.* Licorice: Biodiversity, chemistry, and application in medicine. Novosibirsk: Geo, 2007.
6. *Yakovishin L. A., Korzh E. N.* // AIP Conference Proceedings. 2019. Vol. 2063, 040066.

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