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MOLECULAR COMPLEXATION OF HEDERASAPONIN C WITH CHOLESTEROL IN AQUEOUS ISOPROPYL ALCOHOL

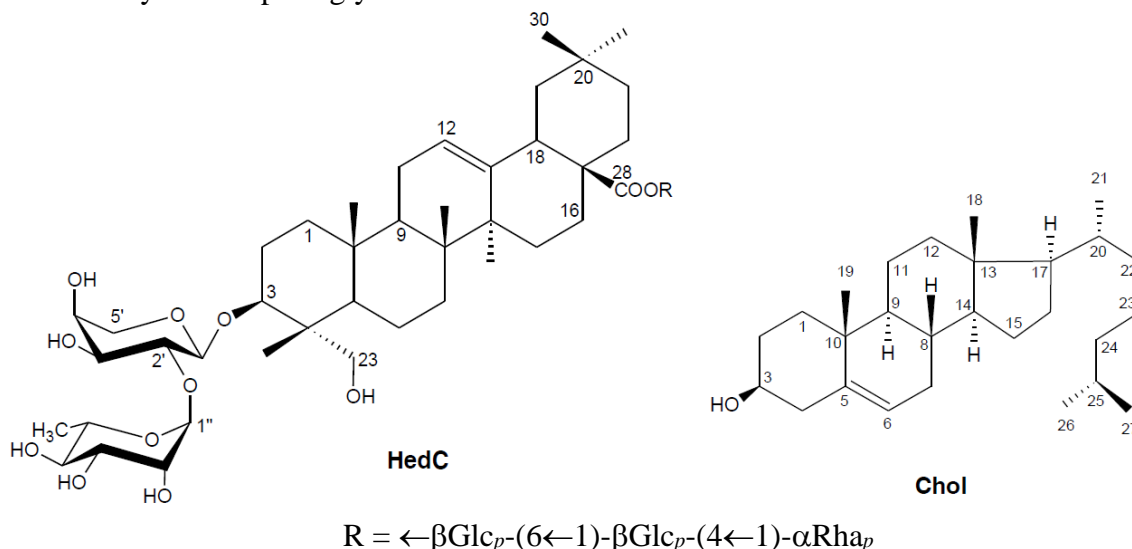
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Abstract. Triterpene glycoside hederasaponin C (hederagenin 3-*O*- α -L-rhamnopyranosyl-(1 \rightarrow 2)-*O*- α -L-arabinopyranosyl-28-*O*- α -L-rhamnopyranosyl-(1 \rightarrow 4)-*O*- β -D-glucopyranosyl-(1 \rightarrow 6)-*O*- β -D-glucopyranoside, HedC) was discovered in the most species of the ivy genus *Hedera* L. (Araliaceae Juss.).¹ HedC is the dominant ivy saponin. A characteristic feature of triterpene glycosides is their ability to form molecular complexes with sterols.^{1,2} The complexation of saponins with sterols is responsible for hemolytic, antitumor, ichthyotoxic, molluscicidal, antifungal, hypocholesterolaemic, and embryotoxic activity of triterpene glycosides.¹



To study the complexation of HedC with cholesterol (Chol) in various media we examined their interaction in 80% aqueous isopropyl alcohol.

The composition of the complex of HedC with Chol was determined by the isomolar series method. This method gave a molar ratio ≈ 1.0 , which corresponded to a 1 : 1 complex. Stability constant of complex $(3.3 \pm 0.7) \cdot 10^6 \text{ (mol/L)}^{-1}$ was calculated based on isomolar curves (A.K. Babko method).² The stability constant of complex formed in 80% aqueous isopropyl alcohol was greater than in aqueous ethanol.²

The presence of molecular complexation of Chol with HedC has been proved by UV- and ATR IR-Fourier spectroscopy. Intermolecular interaction in the complex is carried out by hydrogen bonds formation and hydrophobic contacts. The results can be used to explain the mechanisms of the biological activity of triterpene glycosides.

References

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2. Yakovishin L. A. Molecular complexes of ivy triterpene glycosides with cholesterol / L. A. Yakovishin, V. I. Grishkovets // *Khimiya Rastitel'nogo Syr'ya*. — 2018. — Iss. 4. — P. 133–140.

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