The existence of ring-chain tautomerism between a cyclic semiketal form and an open-chain δ-ketol form of the product of the reduction of dubinidinone has been shown unambiguously by $^{13}$C NMR spectroscopy, and this has been confirmed by the results of PMR spectroscopy. It has been shown that in the solution in deuteropyridine and deuterodimethyl sulfoxide the tautomeric equilibrium is shifted in the direction of the formation of the cyclic semiketal, while in trifluoroacetic acid it is shifted in the direction of the open-chain δ-ketol. Analysis of the IR spectrum has shown that the product of the reduction of dubinidinone exists predominantly in the cyclic semiketal form in the crystalline state.

Earlier [1], for a compound obtained on the Clemensen reduction of dubinidinone (I), structure (II) was proposed [2] on the basis of the change in the absorption curve of the UV spectrum in an alkaline medium, the results of a study of the mass spectrum of (II), and its $d_7$-deutero analog obtained by the method of [3], and an analysis of the IR, PMR, and mass spectra of the O-acetyl derivative of product (II).

It is known, however, that when the molecule of a substance contains two groups capable of intramolecular interaction (in particular, CO and OH), the formation of a cyclic tautomer is possible, and if, in this process, a six-membered ring is produced, the cyclic tautomer is fairly stable [4]. In compound (II), the phenolic hydroxyl is present in the δ-position to the carbonyl group and, therefore, this substance may exist in tautomeric equilibrium with the six-membered semiketal (III).
The aim of the present work was to determine the existence of the ring-chain tautomerism (II) \( \neq \) (III) by the method of \(^{13}\)C NMR spectroscopy. The NMR spectroscopic method is the most effective, unambiguous, and reliable for distinguishing the structures of chain and ring tautomers [5, 6].