



FORMULATION AND EVALUATION OF NOVEL DOSAGE FORMS OF GLYCYRRHIZIC ACID

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Actuality: Glycyrrhizinic acid, a triterpene saponin, is a biologically active compound known for its pronounced antioxidant and anti-inflammatory properties. These pharmacological effects highlight its potential as a valuable component in the development of ophthalmic formulations. Despite the wide range of research on glycyrrhizinic acid, its therapeutic potential in ophthalmology remains underexplored, which emphasizes the relevance of further studies in this direction.

Purpose of research: To explore the potential of glycyrrhizinic acid, a triterpene saponin derived from licorice root, through the development of innovative dosage forms.

Materials and methods: Substance: root of the licorice -250 gr;

Reagents: 5% H₂SO₄, 28 ml; Acetone – 300 ml; Alcohol – 90%, 300 ml; KOH – 2 g; Glacial acetic acid – 50 ml;

Devices: analytical scales, flasks, reverse chiller, filter paper, porcelain glass, pipette, Buchner funnel;

Methods: Extraction method, Laboratory grinder ML 1, IR spectra, Pass online;

Result: The biologically active compound glycyrrhizic acid was obtained by aqueous extraction. The crude extract was further purified using acetone precipitation followed by repeated washing with alcohol. Upon triple isolation, the yield of glycyrrhizic acid increased progressively: 1.44% in the first extraction, 1.68% in the second, and 1.88% in the third.

2. The isolated compound was characterized using IR spectroscopy and confirmed as glycyrrhizic acid. Its properties were compared with industrial and pure reference samples, demonstrating consistency in quality.

3. Based on the obtained substance, two ophthalmic dosage forms were developed in accordance with pharmaceutical requirements. Six ointment prototypes were prepared, from which formulation No. 5 (lanolin 2.5 g; vaseline 15 g) was identified as the most optimal, and a corresponding quality specification was established. In addition, a stable and transparent eye drop formulation was achieved, with its own quality specification prepared.

Conclusion: Glycyrrhizic acid represents a promising biologically active compound with diverse pharmacological effects, including anti-inflammatory, antioxidant, and antiviral activities. The technology applied in this study allows improvement of its purity, thereby enhancing both quality and potential economic value. Further pharmacological investigation of the developed dosage forms may pave the way for the creation of original ophthalmic drugs aimed at treating common eye diseases. Additionally, chemical modification of glycyrrhizic acid is recommended as a strategy to enhance its biological activity and broaden its therapeutic applications.