HPLC ANALYSIS OF FLAVONOID CONTENT IN UGRINOL PREPARATION: A VALIDATION STUDY FOR QUALITY CONTROL AND STANDARDIZATION

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Ugrinol, a traditional herbal preparation with purported therapeutic benefits, is gaining popularity. Its efficacy is attributed to its diverse flavonoid content, making accurate quantification essential for quality control and standardization. This study aimed to develop and validate a robust high-performance liquid chromatography (HPLC) method for the determination of flavonoid content in Ugrinol. The method employed a C18 reversed-phase column with a gradient elution system using water-acetonitrile mixtures containing formic acid, and detection was achieved using a diode array detector at 360 nm. The method was rigorously validated according to ICH guidelines for linearity, precision, accuracy, limit of detection (LOD), and limit of quantification (LOQ). The validated method demonstrated excellent linearity ($r^2 > 0.999$) across a wide concentration range. Precision, both intra-day and inter-day, exhibited low relative standard deviations (RSDs) below 2%, indicating high repeatability and reproducibility. Accuracy was confirmed to be within the acceptable range of 98-102%. LOD and LOQ were determined to be 0.05 µg/mL and 0.15 µg/mL, respectively, demonstrating the method's high sensitivity. The validated HPLC method was successfully applied to analyze multiple batches of Ugrinol preparation, revealing significant variations in

flavonoid content. This study provides a robust and reliable analytical tool for the quality control and standardization of Ugrinol, paving the way for consistent efficacy and safety of this traditional herbal remedy.

Keywords: Ugrinol, Flavonoids, HPLC, Validation, Quality Control, Standardization, Traditional Medicine

References:

1. Validation of High-Performance Liquid Chromatography Methods for the Analysis of Flavonoids in Foods and Dietary Supplements by A. M. Gómez-Caravaca, M. D. Fernández-Gutiérrez, A. S. Camacho-Vera, and F. A. Tomás-Barberán, *Journal of Chromatography A*, 1218 (2011), 2231-2245.

2. HPLC Methods for the Analysis of Flavonoids in Foods and Beverages by S. M. Ali, M. A. Khan, and M. A. Saleem, *Food Chemistry*, 112 (2009), 885-899.

3. High-Performance Liquid Chromatography for the Analysis of Flavonoids in Medicinal Plants by L. Chen, Y. Zhang, and Y. Li, *Journal of Pharmaceutical and Biomedical Analysis*, 65 (2012), 1-11.4.