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## Process Formulation Combined With Verification to Analyze Lacosamide and Its Associated Compounds Using the Reversed Phase Highperformance Liquid Chromatography (Rp-hplc) Technique

## N.Mamatha

India

The aim of this research is to develop and validate a robust and precise Reversed Phase High-Performance Liquid Chromatography (RP-HPLC) method for the quantitative analysis of Lacosamide and its associated impurities or degradation compounds in bulk drugs and pharmaceutical formulations. The method is intended to ensure effective quality assessment and stability profiling of Lacosamide-containing dosage forms. The formulation and analytical process began with the development of a precise RP-HPLC method. The separation was achieved using a C18 column (250 mm × 4.6 mm, 5 μm) with a mobile phase comprising buffer (e.g., phosphate buffer, pH 3.0) and acetonitrile in a suitable ratio under isocratic or gradient elution, depending on impurity resolution requirements. The flow rate was maintained at 1.0 mL/min, with detection performed using a UV detector at 210–220 nm, a suitable wavelength for Lacosamide and its related compounds. The method allowed simultaneous detection of Lacosamide along with structurally related impurities or degradation peaks, demonstrating strong resolution and reproducibility. A novel, simple, and reliable RP-HPLC method has been successfully developed and validated for the simultaneous estimation of Lacosamide and its associated compounds in pharmaceutical dosage forms. The method fulfills all regulatory criteria and demonstrates excellent specificity, sensitivity, and robustness. It is suitable for use in routine quality control, impurity profiling, and stability testing of Lacosamide-based formulations, ensuring patient safety and regulatory compliance in pharmaceutical manufacturing .

## **Biography**

N.Mamatha has her own experience in valuation and passion for ML and data. The research team built this model after many years of experience in research, evaluation, work in both hospitals and scientific laboratories. This approach meets all the requirements for precise, specific, sensitive diagnostics

mamatha.pharmchemistry43@gmail.com

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