



Research article

Development and validation of high performance liquid chromatography methods (HPLC) analysis for simultaneous determination of Acetaminophen, Propyphenazone and Caffeine

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Abstract

Objective: The purpose of this research was to conduct an analysis with a high-performance liquid chromatography (HPLC) method for determining a simultaneously mixture of acetaminophen, propyphenazone and caffeine. **Methods:** This descriptive-experimental study was conducted by the HPLC method. This research was conducted by optimizing the ratio of the mobile phase of methanol: water (10:90), (20:80), (30:70), (40:60), (50:50), (60:40), (70:30), (80:20), (90:10), flow rates 0.5-2.0 mL/min and column temperatures 30, 40, and 50°C. The analytical parameters in the validation test include accuracy, precision, limit of detection (LOD), limit of quantitation (LOQ). **Results:** The results showed that the mobile phase of methanol: water (70:30) was a good optimization result. The average results of determining the levels of acetaminophen, propyphenazone and caffeine in the preparation of Bodrex Migraine® were $101.35 \pm 0.16\%$, $99.24 \pm 0.14\%$, $97.95 \pm 0.16\%$, and Saridon® were $99.50 \pm 0.07\%$, $100.25 \pm 0.12\%$, $98.94 \pm 0.06\%$. The results of the validation parameters performed on acetaminophen, propyphenazone and caffeine were 99.66%, 98.89% and 100.24% for the average recovery results, and 0.01738, 0.01751, 0.02557 for precision, and 1.00026, 0.69104, 0.38920 for the average LOD results and 3.33423, 2.30347, 1.29735 for LOQ average results. **Conclusion:** The mobile phase of methanol: water (70:30) and the flow rate of 1 mL/min with a column temperature of 30°C was a good optimization result for use in the simultaneous analysis of a mixture of acetaminophen, propyphenazone and caffeine.