

**SCREENING FOR PREDNISOLONE IN ANTI-ASTHMATIC HERBAL
REMEDIES USING LC-MS/MS IN SRI LANKA**

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Prednisolone, a corticosteroid used to treat asthma, poses significant concerns when adulterated in herbal remedies, particularly for athletes subjected to anti-doping regulations. Despite their widespread use, comprehensive studies to determine the extent of prednisolone adulteration in herbal products are lacking in Sri Lanka. This study aimed to fill this research gap by screening commonly used herbal remedies for asthma in Sri Lanka to identify the presence of Prednisolone. A tailored LC-MS/MS method was developed and validated for this purpose. An optimized ultrasound-assisted extraction procedure was established using a reference standard, achieving a recovery rate of 100.45% by adjusting the extraction solvent and sonication time. The LC-MS/MS method utilised a biphenyl column (100 mm × 2.1 mm, 2.7 µm) with a mobile phase of acetonitrile and water acidified with 0.1% formic acid. Chromatographic conditions were optimized for a column; oven temperature of 50 °C, an initial acetonitrile concentration of 5%, a dwell time of 0.200 secs, and a run time of 10 min. Validation of the method followed Eurachem guidelines and was done using a Prednisolone reference standard, demonstrating high precision, accuracy, sensitivity, and specificity. Extraction recoveries showed relative standard deviation (%RSD) ≤ 10% and calibration linearities had $R^2 \geq 0.988$. The detection limits were 0.03 µg/g for powdered and 0.003 µg/mL for liquid herbal matrices. The study screened 27 different over-the-counter brands and prescription anti-asthmatic herbal products collected randomly from suburban areas of Colombo. The validated LC-MS/MS method identified that 25 products were below the detection limit, while two prescribed products were flagged as doubtful. In conclusion, the developed LC-MS/MS method successfully detected prednisolone in complex herbal matrices with high specificity and precision, providing valuable insights into the prevalence and extent of prednisolone adulteration in herbal remedies.

Keywords: Adulteration, Herbal Remedies, LC-MS/MS, Prednisolone