

Eco-Friendly RP-HPTLC Method for Determination of Valerenic Acid in Methanolic Extract of *Valeriana officinalis* and Commercial Herbal Products

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SUMMARY. A novel reverse phase high performance thin layer chromatography (RP-HPTLC) method has been established for the estimation of valerenic acid (VA) in methanolic extract of *Valeriana officinalis* and commercial products using green solvent. RP-HPTLC analysis was carried out using ethanol-water (9:1 v/v) as the mobile phase. The densitometric analysis of VA was performed at 226 nm. The chromatographic peaks of VA from plant extract of *V. officinalis* and marketed herbal products were found to be identical with a single spot at $R_f = 0.50 \pm 0.02$. Linear regression analysis revealed a good linear relationship between the peak area and amount of VA. Linearity range was recorded as 500-6000 ng/band. The validation was tested in accordance with ICH guidelines for precision, accuracy and robustness. The proposed eco-friendly RP-HPTLC method was found to be suitable for the analysis of the therapeutic dose of VA in methanolic extract of *V. officinalis* and commercial products.

RESUMEN. Se ha establecido un novedoso método de cromatografía en capa fina de alto rendimiento en fase inversa (RP-HPTLC) para la estimación del ácido valerénico (VA) en el extracto metanólico de *Valeriana officinalis* y productos comerciales que usan solvente verde. El análisis RP-HPTLC se realizó utilizando etanol-agua (9:1 v/v) como fase móvil. El análisis densitométrico de VA se realizó a 226 nm. Se encontró que los picos cromatográficos de VA del extracto vegetal de *V. officinalis* y los productos herbales comercializados eran idénticos con una sola mancha de $R_f = 0.50 \pm 0.02$. El análisis de regresión lineal reveló una buena relación lineal entre el área del pico y la cantidad de VA. El rango de linealidad se registró como 500-6000 ng/banda. La validación se probó de acuerdo con las pautas de ICH para precisión, exactitud y robustez. Se encontró que el método ecológico RP-HPTLC propuesto era adecuado para el análisis de la dosis terapéutica de VA en extracto metanólico de *V. officinalis* y productos comerciales.

KEY WORDS: commercial products, green solvent, HPTLC densitometry, *Valeriana officinalis*, valerenic acid, validation.

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