

アシュワガンダ含有健康食品中のウィザフェリン A の 定量および定性分析

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Quantitative and qualitative analysis of withaferin A in dietary supplements containing ashwagandha

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Abstract

Quantitative and qualitative analytical methods for withaferin A (WA) in dietary supplements containing ashwagandha were developed using ultra-high performance liquid chromatography with a photodiode array detector (UHPLC-PDA) and UHPLC-quadrupole-Kingdon trap mass spectrometry. Ultrasonic extraction was performed using methanol as the extraction solvent. A reversed-phase C18 column was used for quantitative and qualitative analyses with UHPLC. The mobile phase for quantitative analysis was 0.1% (v/v) phosphoric acid solution-acetonitrile, while 0.1% (v/v) formic acid solution-acetonitrile was used for qualitative analysis. Results of the recovery test at the limit of quantitation (10 µg/g) and 10 times the limit of quantitation (100 µg/g) showed a recovery rate of 99.2% and 100.3%, respectively. Further, the relative standard deviation value of the repeatability and intermediate precision were each less than 3%, indicating good precision. When the developed method was applied to a commercial product, the form of the supplement that exhibited the highest WA content among the samples studied was capsule, and WA was detected with 6.52 mg in the capsule. The daily intake of WA was estimated to be 13.04 mg when the capsule product was consumed according to the product label recommendation. Qualitative analysis confirmed the presence of WA in all 15 health food products containing ashwagandha, as the retention times and product ion spectra of all 15 products were consistent with those of the standard solution.

Keywords : フォトダイオードアレイ検出器付き超高速液体クロマトグラフィー、四重極 - キングドントラップ質量分析計、アシュワガンダ、ウィザフェリン A
ultra-high performance liquid chromatography with a photodiode array detector, quadrupole-Kingdon trap mass spectrometry, ashwagandha, withaferin A

I 緒言

アシュワガンダ (*Withania somnifera*) はインド原産のナス科の植物である。ウィザフェリン A (WA) を含む

ウィザノライド類を含有しており、抗炎症作用、抗腫瘍作用および強壯作用等を示すと報告¹⁻³⁾されている。

アシュワガンダ含有健康食品は日本では主に強壯作用を標ぼうする製品として販売されていたが、アシュワガ