

气相色谱-质谱指纹图谱在鉴别贵州茅台酒中的应用

孙其然, 向平, 沈保华, 沈敏*

司法部司法鉴定科学技术研究所, 上海市法医学重点实验室, 上海 200063

Identification of Kweichow Moutai liquor by gas chromatography-mass spectrometry fingerprint

SUN Qiran, XIANG Ping, SHEN Baohua, SHEN Min*

Institute of Forensic Science of Ministry of Justice, Shanghai Key Laboratory of Forensic Science, Shanghai 200063, China

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摘要 应用气相色谱-质谱(GC-MS)建立了贵州茅台酒的指纹图谱,确证了贵州茅台酒中35种特征组分,并采用浙江大学的中药指纹图谱相似度计算软件对样品图谱之间的相似度进行了评价和鉴别。方法的精密度及重复性良好。研究考察了38个批次贵州茅台酒、5种由贵州茅台酒股份有限公司生产的酱香型系列白酒以及12种由其他厂家生产的白酒的指纹图谱与贵州茅台酒指纹图谱模板的相似度。结果表明,通过酒的特征组分比较和基于“夹角余弦法”的指纹图谱相似度分析,可以区分贵州茅台酒和其他不同酒精度、不同香型的白酒。所建立的方法为贵州茅台酒的真伪鉴定提供了技术储备。

关键词: 气相色谱-质谱 指纹图谱 贵州茅台酒 鉴别

Abstract: The fingerprint of Kweichow Moutai liquor was established by gas chromatography-mass spectrometry (GC-MS) and the similarity of fingerprints was evaluated by the fingerprint similarity calculation software designed by Zhejiang University based on included angle cosine. One milliliter of liquor sample was mixed with ten microliter of 2% n-pentyl acetate solution used as internal standard. One microliter of the prepared sample was injected into a GC-MS. The separation was performed on an HP-INNOWAX 19091N-113 capillary column. The precision and repeatability of the method were good as the relative standard deviation (RSD) of intra-batch was less than 5%. A total of 35 characteristic components of Kweichow Moutai liquor were identified. The fingerprints of 38 batches of Kweichow Moutai, 5 Moutai-flavor liquors produced by Kweichow Moutai Company Limited, the same manufacturer as Kweichow Moutai, and 12 other brand liquors were compared in characteristic components and similarity. The results demonstrated that different batches of Kweichow Moutai had good similarity (≥ 0.9), and Kweichow Moutai was differentiated from the liquors of different alcohol contents and flavors, but it was poorly distinguished from the Moutai-flavor liquors by fingerprint similarity calculation software. Therefore, only in combining characteristic components and fingerprint similarity results, Kweichow Moutai can be distinguished from other liquors. The established method offers technical basis for the identification of Kweichow Moutai.

Keywords: gas chromatography-mass spectrometry (GC-MS) fingerprint Kweichow Moutai liquor identification

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Corresponding Authors: 沈敏,研究员,博士生导师,从事法医毒物学研究和鉴定. Email: minshensfjd@hotmail.com

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