

技术与应用

高效液相色谱法同时测定化妆品中的9种水溶性着色剂

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摘要 建立了用高效液相色谱-二极管阵列检测器 (HPLC-DAD) 同时检测化妆品中9种水溶性着色剂 (溶剂绿7、食品黄3、食品红17、酸性黄1、酸性红33、食品红4、食品红1、橙黄I、酸性橙7) 的检测方法。不同种类的化妆品采用不同的样品前处理方法提取后, 用Diamonsil C18色谱柱分离, 以乙腈-磷酸二氢钾缓冲溶液 (pH 6) 为流动相进行梯度洗脱, 检测波长为240 nm, 15 min内可对9种目标物同时进行检测, 且各化合物都达到基线分离。经测定, 该方法的平均回收率 (n = 9) 为85.33%~100.2%, 相对标准偏差 (RSD) 为3.68%~8.20%, 检出限为0.01~0.1 mg/L。方法简单、快速, 能有效地提取、分离和测定化妆品中9种水溶性着色剂。将该方法用于实际化妆品的检测, 结果令人满意。

关键词 [高效液相色谱法](#) [二极管阵列检测](#) [水溶性着色剂](#) [化妆品](#)

Simultaneous determination of 9 water-soluble colorants in cosmetics by high performance liquid chromatography

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Abstract

An analytical method based on high performance liquid chromatography with diode array detector (HPLC-DAD) has been established for the simultaneous determination of 9 water-soluble colorants (Solvent Green 7, Food Yellow 3, Food Red 17, Acid Yellow 1, Acid Red 33, Food Red 4, Food Red 1, Orange I, Acid Orange 7) in cosmetics. The different kinds of samples were treated with different preparation methods. The obtained liquid samples were analyzed by HPLC using a Diamonsil C18 column (250 mm×4.6 mm, 5 μm). Acetonitrile-potassium dihydrogen phosphate (KH₂PO₄) buffer solution (pH 6) was used as the mobile phase for gradient elution. The 9 water-soluble colorants were well separated within 15 min. The average recoveries (n=9) were from 85.33% to 100.2% with the relative standard deviations (RSDs) between 3.68% and 8.20%. The limits of detection (LOD) were in the range of 0.01~0.1 mg/L. The method is simple, rapid, accurate and suitable for the determination of 9 water-soluble colorants in cosmetics.

Key words [high performance liquid chromatography \(HPLC\)](#) [diode array detection \(DAD\)](#) [water-soluble colorants](#) [cosmetics](#)

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