

响应面法优选黄芪提取工艺

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中文摘要:目的: 响应面法优选黄芪的渗漉提取工艺。方法: 采用三因素三水平Box-Behnken试验设计,以乙醇体积分数、流速、乙醇用量为自变量,黄芪甲苷提取率为因变量,HPLC-ELSD测定黄芪甲苷含量,通过对自变量各水平的多元回归及二项式拟合,用响应面法优选乙醇渗漉提取工艺,并进行预测分析。结果: 最佳提取工艺条件为30%乙醇,流速 $1.9 \text{ mL} \cdot \text{min}^{-1} \cdot \text{cm}^{-2}$,乙醇用量为药料量6.5倍。在此条件下,黄芪甲苷提取率理论值 $1.50 \text{ mg} \cdot \text{g}^{-1}$,实测值 $1.487 \text{ mg} \cdot \text{g}^{-1}$,说明该优选工艺模型拟合度良好。结论: Box-Behnken试验设计可用于黄芪渗漉提取工艺的优选,该优选工艺简便、稳定。

中文关键词: [黄芪甲苷](#) [Box-Behnken设计](#) [响应面法](#) [高效液相色谱法-蒸发光散射检测器法](#)

Optimization of Extraction Technology for Astragaloside IV from *Asrtagalus membranacevs* by Response Surface Methodology

Abstract: Objective: To optimize extraction technology of astragaloside IV from *Astragalus membranaceus* by response surface methodology (RSM). **Method:** Three-factor and three-level Box-Behnken experimental design was employed with ethanol concentration, flow rate and liquid-solid ratios as independence variables, extraction rate of astragaloside IV as dependent variable which was determined by HPLC-ELSD, experimental data obtained by multiple regression and binomial fitting of levels from independent variables, ethanol percolation extraction technology was optimized by RSM, and to predictive analysis. **Result:** Optimum extraction conditions were as follows: 30% ethanol as solvent, flow rate $1.9 \text{ mL} \cdot \text{min}^{-1} \cdot \text{cm}^{-2}$, liquid-solid ratio $6.5 \text{ mL} \cdot \text{g}^{-1}$. Under these conditions, theoretical value of extraction rate of astragaloside IV $1.50 \text{ mg} \cdot \text{g}^{-1}$, but measured value of $1.487 \text{ mg} \cdot \text{g}^{-1}$, it showed optimized technology model fitted well. **Conclusion:** Box-Behnken experimental design could be used for extraction optimization of percolation extraction process for *A. membranaceus*, optimized technology was simple and stable.

keywords: [astragaloside IV](#) [Box-Behnken experimental design](#) [response surface methodology](#) [HPLC-ELSD](#)

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