

星点设计优化天南星多糖提取工艺 及提取动力学研究^{*}

赵重博^{1,2} 王晶¹ 吴博¹ 吴纯洁^{2**}

(1. 陕西中医药大学, 陕西 咸阳 712046; 2. 成都中医药大学, 四川 成都 611137)

摘要:目的 应用星点设计-响应面法优化天南星多糖提取工艺,并建立其提取动力学模型方程。方法 在单因素实验基础上,以多糖提取率(Y)为评价指标,料液比(X1)、浸提时间(X2)和提取温度(X3)为考察对象,利用星点设计效应面法优化天南星多糖提取工艺,并采用动力学模型对其提取过程数据进行拟合。结果 优化后的最佳工艺为料液比1:25.8,提取时间154.6 min,提取温度91.5°C,最佳提取工艺下天南星多糖提取率达9.84%±0.12%,动力学方程为 $CB = (25.5078 \times t0.5 / M - 2.0487)0.4383$ 。结论 采用星点设计效应面法优化天南星多糖提取工艺方法可行,提取动力学模型可以较好的表达天南星多糖的提取过程。

关键词:多糖;天南星;星点设计;响应面法;动力学

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Optimization of Extraction Process and Extraction Kinetics of Polysaccharide from Arisaema by Central Composite Design

Zhao Chongbo^{1,2}, Wang Jing¹, Wu Bo¹, Wu Chunjie²

(1. Shaanxi University of Chinese Medicine, Xianyang China, 712046;

2. Chengdu University of Chinese Medicine, Sichuan China, 611137)

Abstract Objective: To optimize extraction process of polysaccharide from arisaema by central composite design - response surface method, and establish the extraction kinetics model equation. **Method:** On the basis of single factor experiment, taking polysaccharide extraction rate (Y) as evaluation index, the ratio of material to liquid (X1), extraction time (X2) and extraction temperature (X3) as the research object, central composite design - response surface method were used to optimize extraction process of polysaccharide from arisaema, and kinetic model was used to fit the extraction process data. **Result:** The optimal process after optimization was that the ratio of material to liquid was 1:25.8, the extraction time was 154.6 min, the extraction temperature was 91.5 C, the extraction rate of polysaccharide from arisaema under the optimal extraction process was 9.84%±0.12%, and the kinetic equation was $CB = (25.5078 \times T0.5 / M - 2.0487) 0.4383$. **Conclusion:** It is feasible to optimize the extraction process of polysaccharide from arisaema by central composite design - response surface method. The extraction kinetic model can express the extraction process of polysac-

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** 通讯作者:吴纯洁(1965-),男,教授,博导,研究方向:中药炮制及饮片质量控制。E-mail:wcyj-one@263.net