

纤维素酶协同超声波辅助提取苦瓜多糖工艺优化 Optimization on Cellulase and Ultrasonic Wave Assisted Extraction Technology of Momordica charantia Polysaccharides

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关键词: 苦瓜 多糖 纤维素酶 超声波 提取 响应面法

摘 要: 为了得到纤维素酶协同超声波法提取苦瓜多糖的最佳工艺条件, 利用Box-Behnken的中心组合设计及响应面法(RSM)探讨了超声波功率、酶量、料液比、时间、pH值和温度等因素的优化组合, 通过建立二次回归模型, 确定其最佳提取工艺条件为: 超声波功率390 W、纤维素酶量3 500 U/g(酶活200 U/mg以上)、料液比1:38、时间40 min、pH值5、温度56℃。在此工艺条件下, 苦瓜多糖的提取率为21.1%, 比热水浸提法、超声波法、纤维素酶法分别提高了7.8%、13.5%、7.7%。结果表明纤维素酶协同超声波法是提高苦瓜多糖得率的有效途径之一。 To establish the extraction technology of cellulase assisted by ultrasonic wave of Momordica charantia polysaccharides (MCP), the optimization was applied to discuss some factors including ultrasound power, enzyme amount, the ratio of solid to liquid, extracting time, pH value, temperature with Box Behnken center united design and the method of response surface analysis (RSM). Through establishing the second regression model, the optimal parameters were conformed as follows: ultrasound power 390 W, cellulase amount 3 500 U/g (enzyme activity was more than 200 U/mg), ratio of solid to liquid 1:38, extracting time 40 min, pH value 5, temperature 56℃. Then the yield of crude Momordica charantia polysaccharides is 21.1%, higher 7.8%, 13.5% and 7.7%, respectively, comparing with the specific heat of flooding, ultrasonic wave and cellulase. These results suggested that cellulase assisted by ultrasonic wave extraction technology was one of the effective ways to improve the yield of Momordica charantia polysaccharides.

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