

槟榔籽总酚提取工艺优化与抗氧化活性试验 Optimization of Extraction Technology and Antioxidant Activities of Total Phenol from Betel Nut Seed

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关键词: 槟榔籽 总酚 提取 响应面法 抗氧化活性

摘要: 为了探索槟榔籽中总酚提取的最佳工艺参数, 在单因素试验的基础上以提取温度、提取时间和液料比为试验因素, 以总酚含量为响应值, 采用三因素五水平的响应面分析法进行试验。结果表明, 3个因素对槟榔籽总酚提取含量的影响大小顺序为: 提取温度、液料比、提取时间; 槟榔籽中总酚提取的最佳工艺参数为: 提取温度58℃、提取时间4h、液料比47mL/g, 总酚含量的预测值为148.09mg/g, 验证值为146.63mg/g。试验证明, 响应面对槟榔籽中总酚提取条件的优化是可行的, 可用于实际预测。抗氧化活性试验表明, 槟榔籽提取物具有较强清除DPPH自由基和ABTS自由基能力, 其EC50值分别为145.62μg/mL和139.38μg/mL。Optimization of the extraction technology for total phenol from betel nut seed was carried out. On the basis of one factor tests, the method of response surface analysis with 3 factors including extracting temperature, time and solvent-material ratio on the content of total phenol was adopted. The optimal extracting conditions are as follows: extraction temperature 58℃; extraction time 4h; solvent-material ratio 47mL/g. The predicted value and measured value of total phenol is 148.09mg/g and 146.63mg/g, respectively. The results indicate that the obtained mode developed by response surface methodology is feasible for practical prediction. The experiments of antioxidant activity show that the betel nut seed extract presents the strong antioxidant activities to the DPPH and ABTS radical, and the EC50 is 145.62μg/mL and 139.38μg/mL, respectively.

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