

农产品辐照研究·食品科学

超临界CO₂萃取烘烤花生中挥发性物质的研究

李淑荣¹, 王丽¹, 宋焕禄², 张春红³, 王强¹

- 1. 中国农业科学院农产品加工研究所, 北京 100193;
- 2. 北京工商大学化学与环境工程学院, 北京 100037;
- 3. 沈阳农业大学食品学院, 辽宁 沈阳 110161

摘要: 采用超临界CO₂技术萃取烘烤花生中挥发性物质,用固相微萃取-气相色谱质谱联用(SPME-GC-MS)技术鉴定萃取物的风味组分,并将样品偏差值和感官评价相结合,评价萃取物香气协调性变化,综合进行萃取条件的优化,以建立一种烘烤花生风味物质的提取方法。结果显示,萃取压力25MPa,萃取温度55℃,萃取时间120min;超临界CO₂萃取能萃取出烘烤花生中近85%的挥发性风味组分,该条件下超临界CO₂萃取物风味轮廓感官上与烘烤花生原始风味接近。采用样品偏差值可以定量评价超临界萃取烘烤花生中风味物质香气协调性的变化。

关键词: 烘烤花生 超临界CO₂萃取 挥发性物质

Supercritical-CO₂ Fluid Extraction of the Volatile Components in Roasted Peanut

LI Shu-rong¹, WANG Li¹, SONG Huan-lu², ZHANG Chun-hong³, WANG Qiang¹

- 1. Institute of Agro-food Science and Technology Chinese Academy of Agricultural Sciences, Beijing 100193;
- 2. College of Chemical Engineering Beijing Technology & Business University, Beijing 100037;
- 3. Shenyang Agricultural university, Shenyang, Liaoning 110161

Abstract: Volatile components from roasted peanut were extracted by supercritical-CO₂ fluid. These volatile components were analyzed by solid phase microextraction(SPME)combined with Gas chromatography-mass spectrometry (GC-MS). Mean square deviation and sense evaluation were used to evaluate aroma profile change of extract. By the above optimized, a novel method was developed for extracting the flavor of roasted peanut.The optimum extraction parameters optimized by orthogonal tests were extraction pressure 25 MPa, extraction temperature 55℃and extraction period 120min. About 85% volatile flavor components of original roasted peanut could be extracted by supercritical-CO₂ fluid. The supercritical-CO₂ fluid extraction of roasted peanut in the optimized conditions provided aroma extracts with high olfactory resemblance to the original roasted peanut. Sample deviation value can evaluate change of the aroma harmony of the roasted peanut flavor.

Keywords: Roasted peanut Supercritical-CO₂ fluidextraction Volatile components

收稿日期 2012-06-05 修回日期 2012-10-23 网络版发布日期

DOI:

基金项目:

公益性行业(农业)科研专项(200903043);中国农业科学院基本科研业务费增量项目

通讯作者: 王强(1965-),男,山东高密人,博士,研究员,主要从事粮油加工与功能食品研究。E-mail: wangqiang365@263.net

作者简介:

作者Email: wangqiang365@263.net

参考文献:

- [1] Larrayoz P, Ibanez F C, Ordonez A I, Torre P, Barcina Y. Evaluation of supercritical fluid extraction as sample preparation method for the study of Roncal cheese aroma [J]. International Dairy Journal, 2000, 10 (11): 755-759
- [2] Bhattacharjee P, Ranganathan T V, Singhal R S, Kulkarn P R. Comparative aroma profiles using supercritical carbon dioxide and Likens Nickerson extraction from a commercial brand of Basmati rice

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(1022KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 烘烤花生
- ▶ 超临界CO₂萃取
- ▶ 挥发性物质

本文作者相关文章

- ▶ 李淑荣
- ▶ 王丽
- ▶ 宋焕禄
- ▶ 张春红
- ▶ 王强

PubMed

- ▶ Article by LI Shu-rong
- ▶ Article by WANG Li
- ▶ Article by SONG Huan-lu
- ▶ Article by ZHANG Chun-hong
- ▶ Article by WANG Qiang

- [J]. Journal of the Science of Food and Agriculture, 2003, 83 (9): 880-883
- [3] Ramos E, Valero E, Ibanez E, Reglero G, Tabera J. Obtention of a brewed coffee aroma extract by an optimized supercritical CO₂ based process [J]. Journal of Agricultural and Food Chemistry, 1998, 46 (10): 4011-4016
- [4] 吴建生,李关荣,俞纯芳,伊奈和夫. 咖啡香气的超临界CO₂抽提液的经时变化研究[J]. 西南农业大学学报, 1995, 17 (4): 291-294
- [5] Dron A, Guyer D E, Gage D A, Lira C T. Yield and quality of onion flavor oil obtained by supercritical fluid extraction and other methods [J]. Journal of Food Process Engineering, 1997, 20 (2): 107-124
- [6] 王欣,陈庆华,李元瑞. 大蒜超临界CO₂萃取物成分分析[J]. 食品与机械, 2003, (6): 44-45
- [7] 臧志清,周端美. 超临界二氧化碳连续萃取蒜油的实验研究[J]. 中国粮油学报, 1998, 13 (3): 21-24.
- [8] Best D. Spices, flavors and oleoresins [J]. Prepared Foods, 1989, 158 (5): 147-148, 150
- [9] Anitescu G, Doneanu C, Radulescu V. Isolation of Coriander oil: comparison between steam distillation and supercritical CO₂ extraction [J]. Flavour and Fragrance Journal, 1997, 12 (3): 173-176
- [10] Reverchon E, Ambruosi A, Senatore F. Isolation of peppermint oil using supercritical CO₂ extraction [J]. Flavour and Fragrance Journal, 1994, 9 (1): 19-23
- [11] 田怀香,王璋,许时英. 超临界CO₂流体技术提取金华火腿中挥发性风味组分. [J] 食品与机械. 2007, 23 (2): 18-22
- [12] 余有贵,曾传广,陈祥斌,李小芳,马立群. 超临界CO₂提取双轮底酒醅中香味成分的工艺研究. [J] 中国酿造, 2006, 164 (11): 31-33
- [13] 任健,杨京,刘钟栋. 超临界CO₂萃取毛尖茶香味成分的研究. [J] 粮油食品科技, 2004, 12(3): 44-45.
- [14] Leunissen M, Davidson V J; Kakuda Y. Analysis of volatile flavor components in roasted peanuts using supercritical fluid extraction and gas chromatography-mass spectrometry [J]. Journal of Agricultural and Food Chemistry, 1996, 44 (9): 2694-2699
- [15] Santerre C R, Goodrum J W, Kee J M. Roasted peanuts and peanut butter quality are affected by supercritical fluid extraction [J]. Journal of Food Science, 1994, 59 (2): 382-386
- [16] 张春红,王丽,李淑荣,吴海文,张振波,王强,宋焕禄,张庆芳. 烘烤花生仁、花生粕和花生壳中挥发性物质的研究[J]. 食品科技, 2009, 1: 35-37
- [17] 刘凌,崔明学,薛毅. 运用气相色谱检测数据定量评价加工果蔬汁的香气协调性变化[J]. 色谱, 2005, 23(4): 426-430
- [18] 吴谋成. 食品分析与感官评价[M]. 中国农业出版社, 2002, 321-326

本刊中的类似文章