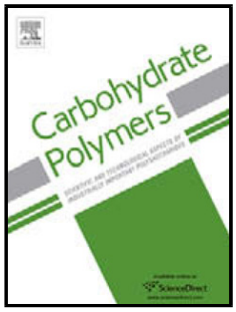

Title: Optimization of pectin extraction from pistachio green hull as a new source

Authors: Elnaz Chaharbaghi, Faramarz Khodaiyan, Seyed Saeid Hosseini

PII: S0144-8617(17)30564-7
DOI: http://dx.doi.org/doi:10.1016/j.carbpol.2017.05.047
Reference: CARP 12333

To appear in:

Received date: 8-3-2017
Revised date: 3-5-2017
Accepted date: 16-5-2017

Please cite this article as: Chaharbaghi, Elnaz., Khodaiyan, Faramarz., & Hosseini, Seyed Saeid., Optimization of pectin extraction from pistachio green hull as a new source.*Carbohydrate Polymers* http://dx.doi.org/10.1016/j.carbpol.2017.05.047

Optimization of pectin extraction from pistachio green hull as a new source

Elnaz Chaharbaghi[a], Faramarz Khodaiyan[b,*], Seyed Saeid Hosseini[b]

[a] Department of Food Science and Engineering, Aras International Compus, University of Tehran, Jolfa 54416-56498, Iran

[b] Bioprocessing and Biodetection Laboratory, Department of Food Science and Engineering, University of Tehran, Karaj 31587-77871, Iran

**Corresponding author: khodaiyan@ut.ac.ir, Tel. Fax: +982632248804*

Highlights:

- Maximum extraction yield of pectin was 22.1±0.5% at optimal conditions.
- Optimum extraction conditions were at 90°C for 30 min with LSR 50 and pH 0.5.
- Pistachio green hull pectin is classified as low methoxyl pectin.
- Galacturonic acid content of pectin under optimal condition was about 65%.
- Molecular weight of pectin under optimal condition was about 12.875 KDa.
-

Abstract

In this paper, the influence of pH (0.5-2.5), temperature (50-90°C), extraction time (30-150 min) and liquid/solid ratio (10-50 v/w) on the acidic extraction yield and degree of esterification (DE) of pistachio green hull pectin were studied by using central composite design. The results indicated that the yield and DE of pectin ranged from 7.31 to 19.02% and 26.00 to 53.01%, respectively. The optimization of pectin extraction condition showed that the optimal condition was pH of 0.5, temperature of 90°C, time of 30 min and liquid/solid ratio of 50 v/w. In this condition, the experimental yield (22.1±0.5%) was fine accord among predicted yield (23.42%). Also, under the optimal extraction condition, the galacturonic acid content of pectin was about 65%. The FTIR spectrum showed that the pectin extracted under optimal condition is rich from polygalacturonic acid.