

Accepted Manuscript

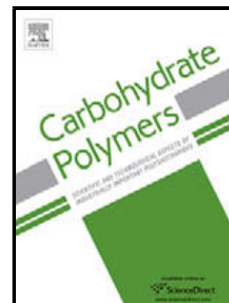
Title: Optimization of isolation of cellulose from orange peel using sodium hydroxide and chelating agents

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PII: S0144-8617(13)00604-8

DOI: <http://dx.doi.org/doi:10.1016/j.carbpol.2013.06.009>

Reference: CARP 7826



To appear in:

Received date: 20-2-2013

Revised date: 30-4-2013

Accepted date: 8-6-2013

Please cite this article as: Bicu, I., & Mustata, F., Optimization of isolation of cellulose from orange peel using sodium hydroxide and chelating agents, *Carbohydrate Polymers* (2013), <http://dx.doi.org/10.1016/j.carbpol.2013.06.009>

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1 **Optimization of isolation of cellulose from orange peel using sodium hydroxide and**
2 **chelating agents**

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6
7 **Abstract** Response surface methodology was used to optimize cellulose recovery from
8 orange peel using sodium hydroxyde (NaOH) as isolation reagent, and to minimize its
9 ash content using ethylenediaminetetraacetic acid (EDTA) as chelating agent. The
10 independent variables were NaOH charge, EDTA charge and cooking time. Other two
11 constant parameters were cooking temperature (98°C) and liquid-to-solid ratio (7.5). The
12 dependent variables were cellulose yield and ash content. A second-order polynomial
13 model was used for plotting response surfaces and for determining optimum cooking
14 conditions. The analysis of coefficient values for independent variables in the regression
15 equation showed that NaOH and EDTA charges were major factors influencing the
16 cellulose yield and ash content, respectively. Optimum conditions were defined by:
17 NaOH charge 38,2%, EDTA charge 9.56 %, and cooking time 317 min. The predicted
18 cellulose yield was 24.06 % and ash content 0.69 %. A good agreement between the
19 experimental values and the predicted was observed.

20
21 *Keywords* Orange peel, Cellulose, Hemicellulose, Soda pulping, Response surface
22 methodology

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