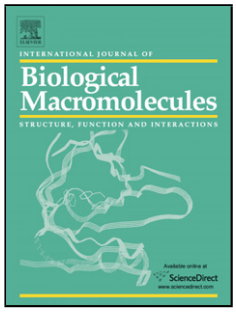

Title: Optimization of ultrasonic extraction of polysaccharides from *Hovenia dulcis* peduncles and their antioxidant potential

Author: Yong Liu Mingliang Qiang Zhongguan Sun Yiqun Du

PII: S0141-8130(15)00457-2
DOI: http://dx.doi.org/doi:10.1016/j.ijbiomac.2015.06.054
Reference: BIOMAC 5200

To appear in: *International Journal of Biological Macromolecules*

Received date: 23-12-2014
Revised date: 7-5-2015
Accepted date: 29-6-2015

Please cite this article as: Y. Liu, M. Qiang, Z. Sun, Y. Du, Optimization of ultrasonic extraction of polysaccharides from *Hovenia dulcis* peduncles and their antioxidant potential, *International Journal of Biological Macromolecules* (2015), http://dx.doi.org/10.1016/j.ijbiomac.2015.06.054

International Journal of Biological Macromolecules
Manuscript Draft

Manuscript Number: IJBIOMAC-D-14-01942

Title: Optimization of ultrasonic extraction of polysaccharides from *Hovenia dulcis* peduncles and their antioxidant potential

Article Type: Research Report

Keywords: *Hovenia dulcis*, ultrasonic extraction, response surface methodology, polysaccharides, antioxidant activities

Abstract: An ultrasonic-assisted extraction of polysaccharides from the ripe peduncles of *Hovenia dulcis* (HDPs) was investigated. Response surface methodology was employed to optimize and model the extraction conditions of HDPs with a Box-Behnken design based on single-factor experiments to obtain higher yield, namely extraction temperature (40-60 °C), ultrasonic power (320-480 W) and extraction time (35-65 min). The optimal conditions were extraction temperature 60 °C, ultrasonic power 362 W and extraction time 65 min. Under these conditions, the maximal yield of crude HDPs was 25.12±0.145 mg/gDW, which is consistent with the predictive yield of 25.33 mg/gDW. The polysaccharides were graded by an ethanol precipitation method and three fractions (HDPs1, HDPs2 and HDPs3) were harvested. These had final ethanol concentrations of 40 %, 60 % and 80 %, respectively and were acidic polysaccharides. The preliminary characterization was mainly composed of Ara, Rha, Glu and Gal, and exhibited an almost similar characteristic absorption peak by gas chromatograph and infrared spectra analysis. The antioxidant activity assays *in vitro* revealed that HDPs can be used as natural antioxidants in functional foods and pharmaceutical industries.