

Accepted Manuscript

Preparation of the controlled acid hydrolysates from pumpkin polysaccharides and their antioxidant and antidiabetic evaluation

Aoxue Lu, Mengen Yu, Zhiyu Fang, Bin Xiao, Li Guo, Weimin Wang, Jia Li, Shuang Wang, Yongjun Zhang



PII: S0141-8130(18)32084-1
DOI: doi:[10.1016/j.ijbiomac.2018.09.158](https://doi.org/10.1016/j.ijbiomac.2018.09.158)
Reference: BIOMAC 10593

To appear in: *International Journal of Biological Macromolecules*

Received date: 3 May 2018
Revised date: 28 August 2018
Accepted date: 25 September 2018

Please cite this article as: Aoxue Lu, Mengen Yu, Zhiyu Fang, Bin Xiao, Li Guo, Weimin Wang, Jia Li, Shuang Wang, Yongjun Zhang , Preparation of the controlled acid hydrolysates from pumpkin polysaccharides and their antioxidant and antidiabetic evaluation. *Biomac* (2018), doi:[10.1016/j.ijbiomac.2018.09.158](https://doi.org/10.1016/j.ijbiomac.2018.09.158)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Preparation of the controlled acid hydrolysates from pumpkin polysaccharides and their antioxidant and antidiabetic evaluation

Aoxue Lu, Menggen Yu, Zhiyu Fang, Bin Xiao, Li Guo, Weimin Wang, Jia Li, Shuang Wang, Yongjun Zhang*

Abstract: Pumpkin polysaccharides (PPe) have various biological activities. This research was to optimize the acid hydrolysis process of PPe with OH \cdot scavenging ability based on central composite design (CCD), and to explore the antioxidant and antidiabetic activities of the acid hydrolysates (PPe-H). A rat model of type 2 diabetes mellitus (T2DM) using high-fat diet and low-dose streptozotocin were established to assess the bioactivities. Both PPe and PPe-H could distinctly reduce fasting blood glucose level, prevent the weight loss in T2DM rats, and exhibited the remarkable ability to enhance the activities of the antioxidant enzymes (CAT and GR, $p < 0.01$, $p < 0.01$) and the level of GSH ($p < 0.05$, $p < 0.01$). Besides, PPe-H could significantly decrease the level of MDA ($p < 0.05$). Furthermore, PPe-H could cause an evident improvement to glucose stimulated GLP-1 secretion from 0 min to 30 min ($p < 0.05$). PPe and PPe-H were both the heteropolysaccharide and composed of rhamnose, arabinose, glucose and galactose, their molecular weight were 104.27 kDa and 37.58 kDa, respectively. The potential antidiabetic mechanism of PPe-H might be related to stimulating the secretion of endogenous GLP-1, decreasing oxidative damages, and then slowing down the process of diabetes.

Key words: Acid-hydrolysis of pumpkin polysaccharides; antioxidant effect; anti-diabetic activity.

* College of Life Sciences, China JiLiang University, Hangzhou, Zhejiang, 310018, China

* Correspondence author: Yong-jun Zhang, Ph. D. College of Life Sciences, China JiLiang University, Xueyuan Street, Xiasha, Hangzhou, Zhejiang, 310018, P.R. China .Tel. 0086-571-87676199.E-mail: yjzhang@vip.163.com

Download English Version:

<https://daneshyari.com/en/article/11010970>

Download Persian Version:

<https://daneshyari.com/article/11010970>

[Daneshyari.com](https://daneshyari.com)