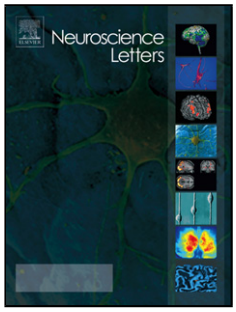

Title: The inhibitory effect of chitosan oligosaccharides on β-site amyloid precursor protein cleaving enzyme 1 (BACE1) in HEK293 APPswe cells

Authors: Xueling Dai, Ping Chang, Xiaoxiao Li, Zhaolan Gao, Yaxuan Sun

PII: S0304-3940(17)30961-8
DOI: https://doi.org/10.1016/j.neulet.2017.11.052
Reference: NSL 33260

To appear in: *Neuroscience Letters*

Received date: 24-7-2017
Revised date: 6-11-2017
Accepted date: 22-11-2017

Please cite this article as: Xueling Dai, Ping Chang, Xiaoxiao Li, Zhaolan Gao, Yaxuan Sun, The inhibitory effect of chitosan oligosaccharides on β-site amyloid precursor protein cleaving enzyme 1 (BACE1) in HEK293 APPswe cells, Neuroscience Letters https://doi.org/10.1016/j.neulet.2017.11.052

The inhibitory effect of chitosan oligosaccharides on β-site amyloid precursor protein cleaving enzyme 1 (BACE1) in HEK293 APPswe cells

Xueling Dai [a,*], Ping Chang [a], Xiaoxiao Li [a], Zhaolan Gao [b], Yaxuan Sun [b,*]

[a] Beijing Key Laboratory of Bioactive Substances and Functional Foods, Beijing Union University, Beijing 100191, China;

[b] Department of Food Science, College of Biochemical Engineering, Beijing Union University, Beijing 100023, China

* To whom correspondence should be addressed:

E-Mail: xueling@buu.edu.cn (X.D.); Tel.: +86-10-62004534; Fax: +86-10-62388926;
E-Mail: sunxx@buu.edu.cn (Y.S.); Tel.: +86-10-62004536; Fax: +86-10-62004536.

Highlights

- COS dose-dependently decreased the cell apoptosis mediated by APPswe overexpression.
- COS repressed the secretion of both Aβ40 and Aβ42 in HEK293 APPswe cells.
- COS significantly reduced both BACE1 expression and enzymatic activity.
- eIF2α phosphorylation was involved in COS-mediated BACE1 reduction.

Abstract: Amyloid precursor protein (APP) proteolysis is essential for the production of β-amyloid peptides (Aβ) that form senile plaques in Alzheimer's disease (AD) brains. The β-site amyloid protein precursor cleaving enzyme 1 (BACE1) is the rate limiting enzyme in the generation of Aβ from APP, inhibition of BACE1 is thereby considered as an attractive strategy for anti-AD drug discovery. Chitosan oligosaccharides (COS) has been shown to possess various biological activities. Here we investigated the potential inhibitory effect of COS on both BACE1 expression in HEK293 APPswe