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Author: Hong Zhao Qihong Wang Yanping Sun Bingyou
Yang Zhibin Wang Guifang Chai Yongzhou Guan Weiguo Zhu
Zunpeng Shu Xia Lei Haixue Kuang



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1 **Purification, characterization and immunomodulatory effects of**
2 ***Plantago depressa* polysaccharides**

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4 Hong Zhao^{a,b}, Qihong Wang^{a,*}, Yanping Sun^a, Bingyou Yang^a, Zhibin Wang^a, Guifang Chai^a, Yongzhou Guan^a,
5 Weiguo Zhu^c, Zunpeng Shu^a, Xia Lei^a, Haixue Kuang^{a,**}

6
7 ^a Key Laboratory of Chinese Materia Medica, Heilongjiang University of Chinese Medicine, Ministry of Education,
8 Harbin 150040, China.

9 ^b Key Laboratory of Biological Medicine Preparations, Institute of Pharmacy, Jiamusi University, Jiamusi 154007,
10 China.

11 ^c Chemistry Department, Henan Key Laboratory of Chemical Biology and Organic Chemistry, Key Laboratory of
12 Applied Chemistry of Henan Universities, Zhengzhou University, Zhengzhou 450052, China.

13
14 * Corresponding author. Tel.: +86 451 82193001; fax: +86 451 82110803.

15 ** Corresponding author. Tel.: +86 451 82193001; fax: +86 451 82110803.

16 E-mail address: qhwang668@sina.com (Q. Wang); hxkuang@hotmail.com (H. Kuang).

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18 **ABSTRACT**

19 Four purified polysaccharide fractions from seeds of *Plantago depressa* (PDSP-1, PDSP-2,
20 PDSP-3 and PDSP-4) were obtained by isolation and purification using DEAE-52 cellulose and
21 Sephacryl S-400 HR chromatography. Basic physicochemical properties including molecular
22 weight, chemical composition, FT-IR and glycosidic linkage of these fractions were investigated.
23 They seemed to be homogeneous acidic protein-bound heteropolysaccharides with high molecular
24 weight of over 1000 kDa and contained a lot more β -type glycosidic linkages than α -type. PDSP-3
25 mainly contained mannose, arabinose and fucose, and the others were rich in arabinose, fucose
26 and galacturonic acid. The immunomodulatory effects of them were assessed by splenocyte
27 proliferation index and production of NO and TNF- α from macrophages. They all showed
28 significant immunomodulatory activities, and PDSP-3 presented the strongest effect. Their
29 observed differences in biological activities were probably due to their structure differences. And
30 monosaccharide compositions, linkage types and molecular weight may affect their
31 immunomodulatory activities.

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33 **Keywords:** *Plantago depressa*; Acidic polysaccharide; Purification; Partial structure;
34 Immunomodulatory effects

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