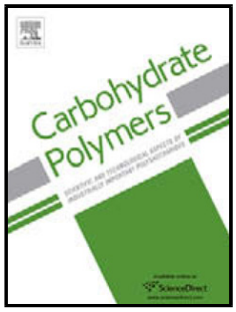

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Structural characterization, antioxidant and hepatoprotective activities of polysaccharides from *Sophorae tonkinensis* Radix

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Highlights

- Two polysaccharides had been isolated from Sophorae tonkinensis Radix.
- Preliminary characterization of the two polysaccharides was investigated.
- In vitro antioxidant activities of the two polysaccharides were studied.
- Polysaccharides reduced acetaminophen-induced liver injury in mice.

A B S T R A C T

In current study we present two polysaccharides, STRP1 and STRP2, purified from *Sophorae tonkinensis* Radix via column chromatography. Structural analyses indicated that STRP1 and STRP2 were consisted of mannose, rhamnose, glucuronic acid, glucose, galactose and arabinose in a similar molar ratio with main backbones of (1→3)-linked-α-D-Gal and (1→4)-linked-α-D-Glc, while average molecular weights were 1.30×10^4 and 1.98×10^5 Da, respectively. We observed a strong chelating ability on ferrous ions; substantial radical scavenging activities on DPPH, hydroxyl and superoxide anion radicals in vitro; and significant attenuation on acetaminophen-induced hepatic oxidative damage in mice for STRP1 and STRP2. The promising data on these polysaccharides showcase the need to further develop novel natural antioxidant and liver-protecting drugs.

Keywords: *Sophorae tonkinensis* Radix polysaccharides; structural characterization; antioxidant activity; hepatoprotective activity.

1. Introduction

Sophorae tonkinensis Radix (S. tonkinensis) is the processed lateral root of Sophora subprostrata (Leguminosae) which is widely distributed over the southwestern provinces of China (Cho, Chuang, & Chen, 1986). This plant is commonly used as a traditional Chinese medicine,

Abbreviations: STRP, *Sophorae tonkinensis* Radix polysaccharides; APAP, acetaminophen; FT-IR, fourier transform infrared; HPLC, high performance liquid chromatography; HPGPC, high performance gel permeation chromatography; GC-MS, gas chromatography and mass Spectrometry; NMR, nuclear magnetic resonance spectrometer; SEM, Scanning electron microscopy; H&E, hematoxylin-eosin; AST, aspartate aminotransferases; MDA, malondialdehyde; ROS, reactive oxygen species; GSH, generation and increasing liver glutathione; GPx, glutathione peroxidase; T-SOD, total superoxide dismutase; CAT, catalase; DPPH, 1,1-Diphenyl-2-picrylhydrazyl.

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