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Structural characterization and evaluation of the antioxidant activities of
polysaccharides extracted from Qingzhuan brick tea

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ABSTRACT: The crude tea polysaccharides (CTPS) from Qingzhuan brick tea(QZBT) were extracted and fractionated to afford two fractions, namely TPS-1 and TPS-2. Analyses were conducted concerning the structural characterization and antioxidant activities of these samples. Component analysis revealed that the carbohydrate, uronic acid, protein and polyphenol contents of these samples differed significantly. Fourier transform infrared analysis showed that these samples showed similar characteristic absorption peaks for polysaccharides. Ultraviolet-visible spectroscopy, circular dichroism, scanning electron microscopy and thermogravimetric analyses indicated that there were considerable differences in the presence of protein, surface features, conformational characteristics and thermodynamic behaviors. For antioxidant activities in vitro, CTPS, TPS-1 and TPS-2 exhibited concentration-dependent antioxidant activities, with TPS-2 showing significantly higher antioxidant activity than CTPS and TPS-1. These results provide a scientific and strong foundation for the use of tea polysaccharides(TPS) from QZBT and further research towards the relationships between the characteristics and antioxidant activities of TPS.

Abbreviations: BDT, brick dark tea; QZBT, Qingzhuan brick tea; TPS, tea polysaccharides; CTPS, crude tea polysaccharides.

Keywords: Polysaccharides of Qingzhuan brick tea; Structure; Antioxidant activity

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