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Title: Optimization of ultrasonic extraction of polysaccharides from *Hovenia dulcis* peduncles and their antioxidant potential

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Keywords: *Hovenia dulcis*, ultrasonic extraction, response surface methodology, polysaccharides, antioxidant activities

Abstract: An ultrasonic-assisted extraction of polysaccharides from the ripe peduncles of *Hovenia dulcis* (HDPs) was investigated. Response surface methodology was employed to optimize and model the extraction conditions of HDPs with a Box-Behnken design based on single-factor experiments to obtain higher yield, namely extraction temperature (40-60 °C), ultrasonic power (320-480 W) and extraction time (35-65 min). The optimal conditions were extraction temperature 60 °C, ultrasonic power 362 W and extraction time 65 min. Under these conditions, the maximal yield of crude HDPs was 25.12±0.145 mg/gDW, which is consistent with the predictive yield of 25.33 mg/gDW. The polysaccharides were graded by an ethanol precipitation method and three fractions (HDPs1, HDPs2 and HDPs3) were harvested. These had final ethanol concentrations of 40 %, 60 % and 80 %, respectively and were acidic polysaccharides. The preliminary characterization was mainly composed of Ara, Rha, Glu and Gal, and exhibited an almost similar characteristic absorption peak by gas chromatograph and infrared spectra analysis. The antioxidant activity assays *in vitro* revealed that HDPs can be used as natural antioxidants in functional foods and pharmaceutical industries.

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