Supporting Information

ABTS radical scavenging activity assay

Briefly, 2 mL of samples at different concentrations (0.5-2.5 mg/mL) were mixed evenly with 2 mL ABTS solution in the test tube. After incubation in dark for 6 min, the absorbance was measured at 734 nm as A_i. The control was determined by using distilled water instead of sample solution (A_0). ABTS radical scavenging activity was calculated according to the following formula:

$$\text{ABTS radical scavenging activity (\%)} = \left(1 - \frac{A_i}{A_0}\right) \times 100$$

(S1)

Hydroxyl radical scavenging activity assay

Briefly, 200 μL of samples at different concentrations (0.5-2.5 mg/mL) were mixed thoroughly with 5 mL ferrous (2 mmol/L) sulfate solution and 5 mL hydrogen peroxide solution (6 mmol/L). Then 2 mL salicylic acid solution (6 mmol/L) was added, and the absorbance was determined at 510 nm immediately after the mixture was evenly mixed, denoted as A_0. Distilled water was used to replace the sample for the blank control (A_1). The hydroxyl radical scavenging activity was calculated by the following equation:

$$\text{Hydroxyl radical scavenging activity (\%)} = \frac{A_0 - A_1}{A_0} \times 100 \qquad \text{(S2)}$$

Superoxide radical scavenging activity

1 mL of samples (0.5-2.5 mg/mL) were mixed evenly with 5 mL of Tris-HCl buffer solution (50 mmol/L, pH 8.2), then the mixture was placed in a water bath at 35 ℃ for 20 min. Then 1 mL of pyrogallol (10 mmol/L) was added and reacted for 4 min at 37 ℃. Afterwards, a drop of

concentrated HCl was added to terminate the reaction. Then the absorbance was determined at 320 nm as A_1 and the absorbance of Tris-HCl buffer and pyrogallic acid solution as A_0. The Superoxide radical scavenging activity was calculated as follows:

$$\text{Superoxide radical scavenging activity (\%)} = \frac{A_0\text{-}A_1}{A_0} \times 100 \qquad (S3)$$