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NOTE

Antioxidant Activity of *Ixora chinensis*

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Ixora chinensis, a traditional Chinese medicine material, was extracted with different solvent. Their antioxidant activities were investigated using three tested systems *in vitro*, including DPPH, ABTS radical scavenging assay and reducing power assay. The acetone extract exhibited outstanding antioxidant activities. The results showed that the extracts of *Ixora chinensis*, especially acetone extract, possessed potent antioxidant activities, could be used as functional food and medicine materials.

Key Words: DPPH, ABTS, Reducing power, *Ixora chinensis*.

Antioxidant is the compound which inhibits or delay the oxidation process, can reduce oxidative damage of human body form reactive oxygen species[1]. The most commonly used synthetic antioxidants are questioned due to their instability and possible carcinogenicity[2,3]. Therefore, there is a growing attention in seeking natural antioxidants. Plants are considered to be the best resources for natural antioxidant[4,5].

Ixora chinensis, belonging to the Rubiaceae family, is widespread in China. As one of the most important traditional medicines, it is used as a remedy for a wide range of diseases such as hypertension, abnormal menstruation, skin and external diseases, rheumatism and gastralgia. However, there isn't any information on antioxidant activity of *Ixora chinensis* that has been reported. In the present paper, the antioxidant activities of *Ixora chinensis* extracts were investigated using DPPH, ABTS radical scavenging assay and reducing power assay.

Extraction: Fifty grams of air-dried plant materials was immersed in 500 mL of ethanol (95 %), acetone and ethyl acetate, respectively and the filtrate was collected for three times at every 48 h interval. The extract was then concentrated under reduced pressure at 40 ºC using vacuum rotary evaporator. Thus, the acetone extract (AE), ethanol extract (EE) and ethyl acetate extract (EEE) were obtained.

DPPH radical scavenging assay: Extract solution (0.5 mL) in 95 % ethanol was added to 8 mL 0.004 % (w/v) solution of DPPH in 95 % ethanol. The absorbance at 515 nm was measured at 0.5 h.

ABTS radical scavenging assay: $ABTS^{\cdot+}$ was produced by reacting 7 mM ABTS stock solution with 2.45 mM potassium persulfate and the mixture was left to stand in the dark at room temperature for 12-16 h before use. The $ABTS^{\cdot+}$ solution (stable for 2 days) was diluted with 5 mM phosphate-buffered saline (pH 7.4) to an absorbance of 0.70 ± 0.02 at 730 nm. After addition of 150 µL of sample to 4 mL of diluted $ABTS^{\cdot+}$ solution, an absorbance reading was taken at 0.5 h.

Measurement of reducing power: Fractions solutions (0.5 mL) in 95 % ethanol were mixed with phosphate buffer (2.5 mL, 0.2 M, pH 7.4) and potassium ferricyanide [$K_3Fe(CN)_6$] (2.5 mL, 1 %). After the mixture was incubated at 50 ºC for 20 min, 2.5 mL of trichloroacetic acid (10 %, w/v) was added and the mixture was then centrifuged at 3000 rpm for 10 min. 2.5 mL of the upper layer of the above solution was mixed with 2.5 mL of distilled water and 0.5 mL of ferric chloride (0.1 %) and then the absorbance was measured at 700 nm.

DPPH radical scavenging activity: The DPPH radical inhibition effect of the extracts was shown in Fig. 1A. With increasing concentration of extracts, the scavenging effect on DPPH radical increased. All the extracts processed significant scavenging activity on DPPH radical, in which acetone extract exhibited the highest DPPH scavenging effect (80.1 % inhibition). The scavenging capacities are following the order: acetone extract > ethanol extract > ethyl acetate extract.

ABTS radical scavenging activity: The ABTS radical scavenging capacities of ethanol extract, BE, PE were presented in Fig. 1B. The ABTS radical scavenging activities of all extracts increased in a concentration dependent manner. For ethanol extract, the inhibition for ABTS radical was 13.7 % with a concentration of 0.5 mg/mL. When the concentration of acetone extract increased to 2 mg/mL, the inhibition increased to 35.4 %. Acetone extract exhibited the most effective scavenging ability, while the lowest one was found to be the ethyl acetate extract. The order of scavenging activities on ABTS radical of the three extracts was similar to that on DPPH.

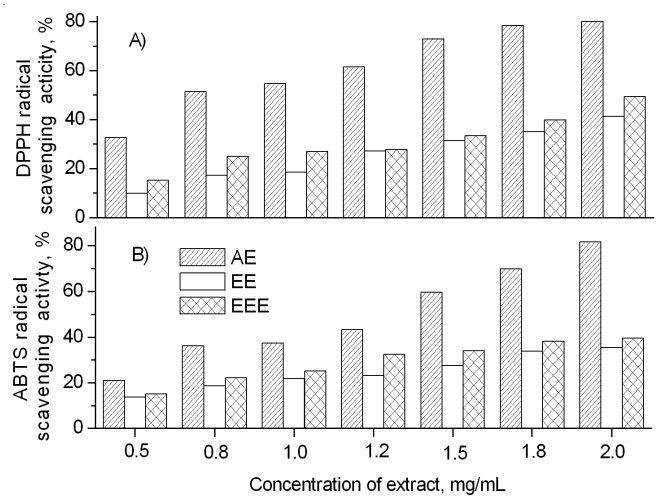

Fig. 1. DPPH radical scavenging activity A) and ABTS radical scavenging activity B) of various solvent extracts from *Ixora chinensis*

Reducing power: The reducing power of the extracts from *Ixora chinensis* was shown in Fig. 2. As can be seen, the absorbance increased with increasing concentration of extracts. For acetone extract, the absorbance was 0.22 at 1.0 mg/mL, while the value increased to 0.42 at 2.0 mg/mL. acetone extract exhibited the highest absorbance value, indicating that acetone extract possessed the highest reducing power.

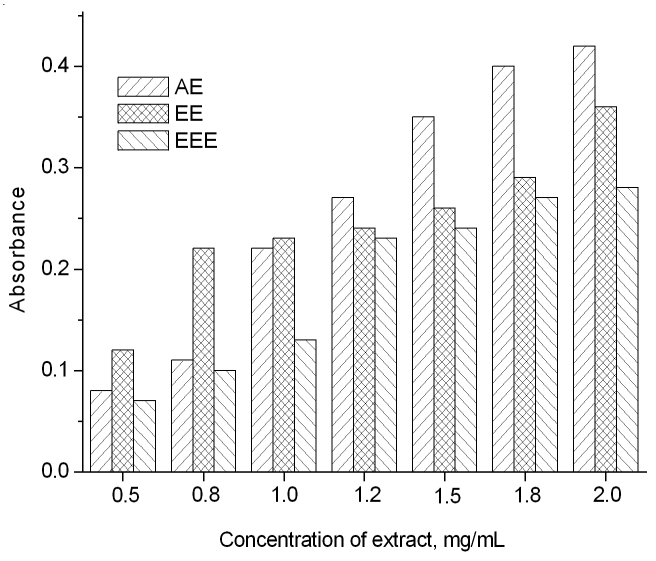

Fig. 2. Reducing power of various solvent extracts from *Ixora chinensis*

Conclusion

In the present investigation, various solvent extracts of *Ixora chinensis* were screened for antioxidant activity using DPPH, ABTS radical assay and reducing power assay. The results showed that the all of extracts exhibited outstanding scavenging effect on DPPH and ABTS radical and possessed strong reducing power. The antioxidant activities in all tested system followed the same order: acetone extract > ethanol extract > ethyl acetate extract. Based on the above results, the extracts of *Ixora chinensis*, were found to be excellent scavengers for free radical and possess remarkable antioxidant ability, which could be used in food and pharmaceutical industry.

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