

## 뜰보리수 추출물의 항산화성과 미백효과

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### Antioxidant activity and whitening effects for extracts of *Elaeagnus multiflora*

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#### Objective

*Elaeagnus multiflora* is medicinal plant and the fruit, leaves, and root has been used on treatment for cough, diarrhea, itch and foul sores, and even cancer for long time in China. It contains many essential fatty acids, which is fairly unusual for a fruit. More importantly, it is being investigated as a food that is capable of reducing the incidence of cancer and also as a means of halting or reversing the growth of cancers. Considering there are little informations about medicinal properties of *E. multiflora* fruit, we investigated anti-oxidant and tyrosinase inhibitory activity of *E. multiflora* fruit in the present study.

#### Materials and Methods

- Material extract : 40 g of dried *E. multiflora* fruit were extracted with 200 ml each of petroleum ether (PE), chloroform (CE), ethyl acetate (EE), butanol (BE) and water (WE) in a Soxhlet extractor for 24hrs. The solvents were concentrated to dryness with a vacuum rotary evaporator under controlled temperature (<50°C).
- DPPH radical scavenging activity
- Reducing power
- Xanthine oxidase inhibitory activity
- Tyrosinase inhibitory activity

#### Results and Discussion

- All fractions of *E. multiflora* fruit showed DPPH radical scavenging activity to different extents in a concentration dependent manner (Fig. 1). Their activities at 10 mg/ml, decrease in the following order : CE > EE > PE > WE > BE. Among them, CE, EE and PE were found minimal concentration inhibiting half of DPPH radical (IC<sub>50</sub>) at 2.553 mg/ml, 3.723 mg/ml and 6.632 mg/ml, respectively.

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○ The reducing capacity of a compound may serve as a significant indicator of its potential antioxidant activity (Fig. 2). Reducing capacity of various extract compounds at 500  $\mu\text{g}$  decreased in the following order: CE > EE > WE > PE > BE.

○ Inhibitory effects on xanthine oxidase were EE presented the strongest effects with  $\text{IC}_{50}$  of 68.76  $\mu\text{g}/\text{ml}$ , significantly higher than that of ascorbic acid, 405.87  $\mu\text{g}/\text{ml}$  (Fig. 3).

○ Effects of *E. multiflora* fruit on tyrosinase activities were showed in Table 1. EE strongly inhibited tyrosinase activities with  $107.94 \pm 2.8\%$  of inhibition at 10 mg/ml and  $43.70 \pm 0.04\%$  at 3 mg/ml, significantly higher than that of other extracts.

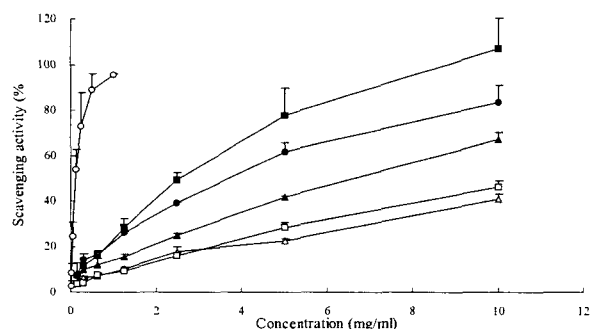


Fig. 1. Effects of *E. multiflora* fruit on scavenging DPPH free radical. Petroleum ether extract( $\blacktriangle$ ), chloroform extract( $\blacksquare$ ), ethyl acetate extract( $\bullet$ ), butanol extract( $\triangle$ ), water extract( $\square$ ), ascorbic acid( $\circ$ ).

Fig. 2. Reducing power of *E. multiflora* fruit.

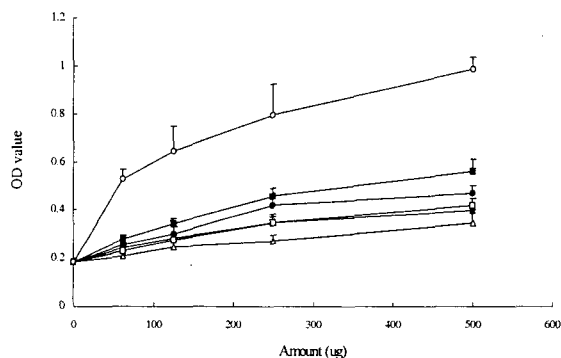


Fig. 3. Inhibitory effects of *E. multiflora* fruit on xanthine oxidase.

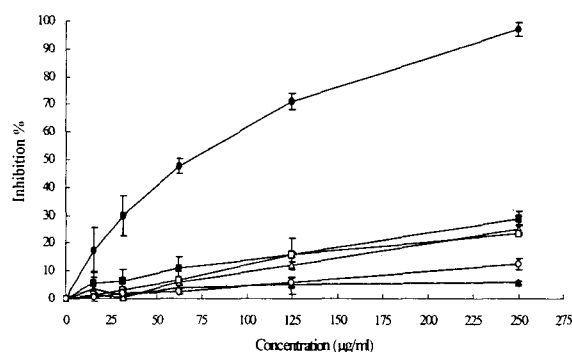


Table 1. Effects of *E. multiflora* on tyrosinase activities

Concentration (mg/ml)	Inhibition on tyrosinase activity (%)				
	PE	CE	EE	BE	WE
1	0.00 $\pm$ 0.00	3.19 $\pm$ 3.50	12.77 $\pm$ 16.82	0.00 $\pm$ 0.00	1.59 $\pm$ 8.51
3	26.30 $\pm$ 4.64b	3.89 $\pm$ 1.46c	43.70 $\pm$ 0.04a	2.73 $\pm$ 0.91c	8.56 $\pm$ 4.21c
10	46.54 $\pm$ 2.54b	45.65 $\pm$ 9.13b	107.94 $\pm$ 2.80a	24.27 $\pm$ 4.84c	5.51 $\pm$ 3.86d

Data were presented as mean $\pm$ S.D.

Means in same row with different character represent significantly different ( $p < 0.05$ ).