

**Antioxidant activity and  $\alpha$ -glucosidase inhibitory effect of the foxglove extracts (*Rehmannia glutinosa* var.) by various solvent extraction**

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### Objectives

The foxglove (*Rehmannia glutinosa* var.) is a perennial medicinal plant that originates from China and belongs to the family Scrophulariaceae. The foxglove has been reported that this extract have various medical effects such as reducing blood pressure, antibiotic effects against bacteria and antioxidant activity. The aim of this study was investigated the changes of antioxidant activity and antidiabetic activity of the foxglove extracts by various extracts solvent.

### Materials and Methods

Experimental studies were performed to measure antioxidant activity and  $\alpha$ -glucosidase inhibitory effect of the foxglove extracts. The foxglove was extracted different solvents including 60~100% MeOH, 60~100% EtOH, acetone, ethyl acetate,  $dH_2O$  at room temperature, and then filtrated. The filtrate were dried by rotary vacuum evaporator, and then evaluated electron donating ability (EDA), reducing power and  $\alpha$ -glucosidase inhibitory effect of the extracts.

### Results

The extraction yields of foxglove extracts are shown in Table 1. One hundred percent MeOH extract indicated the highest extraction yield as 78.52% (w/w) and ethyl acetate extract showed the lowest extraction yield as 0.57% (w/w). The electron donation ability (EDA) of 80% EtOH extracts showed as 19.98% at 120  $\mu$ L injection (10 mg/mL), while acetone extrats showed the highest EDA as 51.28%. The reducing power of foxglove extracts showed from 0.1906 to 0.7635 absorbance at 700nm. The  $\alpha$ -glucosidase inhibitory effect of 80% MeOH extracts indicated the highest inhibition as 93.44% at 15  $\mu$ g/mL, while ethyl acetate extracts indicated lowest inhibition as 17.11%. It was found that acetone and ethyl acetate extracts showed antioxidant activity more than the others solvent extracts. However,  $\alpha$ -glucosidase inhibitory effect showed highly inhibition on MeOH extracts.

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Table 1. The extraction yields of the foxglove according to different extraction solvent.

Solvent	Remark	Yields (%, w/w)
100% MeOH	M100	78.52
80% MeOH	M80	63.41
60% MeOH	M60	71.75
100% EtOH	E100	4.03
80% EtOH	E80	71.31
60% EtOH	E60	71.14
Acetone	Acetone	0.59
Ethyl acetate	EtOAc	0.57
<i>d</i> H <sub>2</sub> O	Water	58.75

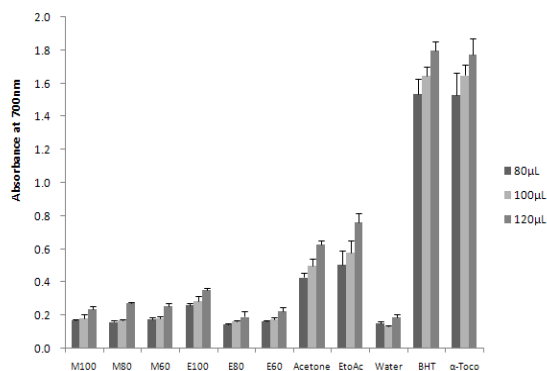


Fig. 2. Reducing power of foxglove extracts by various solvent extraction.

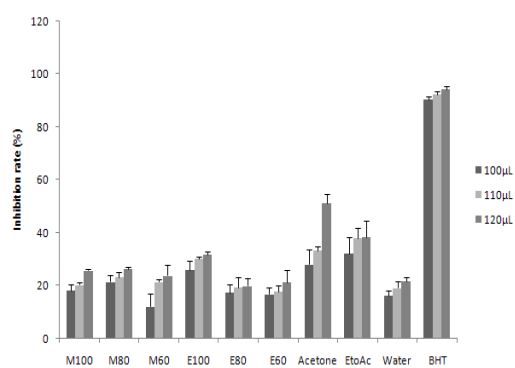


Fig. 1. Changes of electron donation ability of foxglove extracts by various solvent extraction.

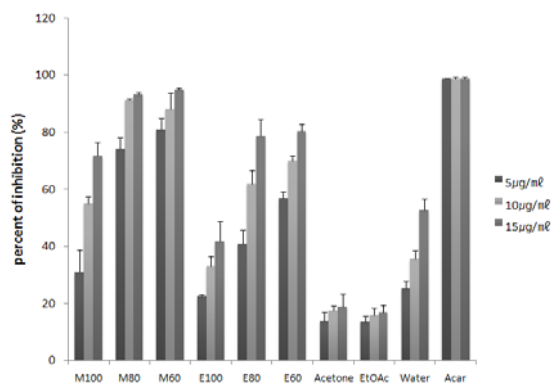


Fig. 3.  $\alpha$ -Glucosidase inhibitory effect of foxglove extracts by various solvent extraction.