

**Antioxidant, Antimicrobial Activity and  $\alpha$ -Glucosidase Inhibitory effect of Cortex Moutan**

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**Objectives**

Traditional Chinese medicines played important roles in clinical therapy. Cortex Moutan a dried root bark of *Paeonia moutan* Sims, it is an important Chinese herbal medicine. Thus, the aim of this work was find out influence of different solvents on the extract yield. Then their  $\alpha$ -glucosidase inhibitory effect, antimicrobial activity, reducing power and 2,2-diphenyl-2-picrylhydrazyl hydrate (DPPH) radical scavenging ability were investigated.

**Materials and Methods**

◦ Materials

The dried cortex moutan was extracted in different solvents, including methanol (60%, 80%, 100%), ethanol (60%, 80%, 100%), 100% acetone, 100% ethyl acetate and aqueous. The extract was filtered and three replicated were extract for sample under the same conditions with new solvent. The filtered extracts were mixed and concentrated using a rotary evaporator. The extracts for further analysis.

◦ Methods

The DPPH redical scaring, reducing power, antimicrobial and  $\alpha$ -glucosidase inhibitors activity of cortex moutan were investigated. In addition, the cortex moutan extracts were dissolved in methanol and filtered (0.45  $\mu$ m) for HPLC analysis. Chromatographic separation was carried out at room temperature using a YMC pack pro C18 analytical column (150 mm $\times$ 4.6 mm, 5 $\mu$ l). The mobile phase consisted of methanol, water and acetonitrile; flow rate was 0.8 ml/min. The detector wave length was set at 274 nm.

**Results**

In this study results showed that A extract achieved maximum yield (57.14%) and paeonol concentration in E extract was highest (60.69  $\mu$ g/ml). In addition 100E extracts of cortex moutan exhibited good scavenging activites against DPPH radical and significant reducing power among all the extracts. It also possessed potent  $\alpha$ -glucosidase inhibitors activity (5.54  $\mu$ g/ml). Futhermore, the E extract showed the most effective inhibition against *E. coli* (MIC value of 250  $\mu$ g/ml), when compared to the other extract.

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Table 1. The extract yield and DPPH free radical scavenging activity from cortex moutan.

Solvent	Extract yield (%)	DPPH radical Scavenging activity IC <sub>50</sub> (µg/ml)
W	24.34±0.29	25.26 ± 0.02
E	1.72±0.11	23.22 ± 0.26
A	57.14±0.30	22.62 ± 1.06
60 E	26.28±2.49	22.45 ± 0.62
80 E	24.73±0.39	22.26 ± 0.97
100 E	6.03±0.16	20.88 ± 0.28
60 M	22.02±3.65	21.32 ± 0.34
80 M	22.62±2.76	21.29 ± 0.63
100 M	23.27±2.71	23.82 ± 0.82
BHA		4.00 ± 0.10
BHT		86.00 ± 1.50

Table 2. Antimicrobial activity of extracts from cortex moutan.

Extracts	MIC(µg/ml)			
	Bacteria			
	K.p (-)	E.c (-)	S.a (+)	B.s (+)
W	>1000	>1000	>1000	>1000
E	>1000	250	1000	>1000
A	>1000	500	1000	>1000
60E	>1000	1000	1000	>1000
80E	>1000	1000	1000	>1000
100E	>1000	1000	1000	>1000
60M	>1000	1000	1000	>1000
80M	>1000	1000	1000	>1000
100M	>1000	1000	500	>1000

Table 3. α-Glucosidase inhibitory activity of extract from cortex moutan.

Extract	IC <sub>50</sub> (µg/ml)
W	9.71 ± 1.62
Et	8.99 ± 1.42
A	7.90 ± 1.12
60 E	7.77 ± 1.08
80 E	6.72 ± 0.99
100 E	5.54 ± 1.02
60 M	6.68 ± 1.13
80 M	5.06 ± 1.22
100 M	6.97 ± 0.83
Acarbose	3.00 ± 0.23

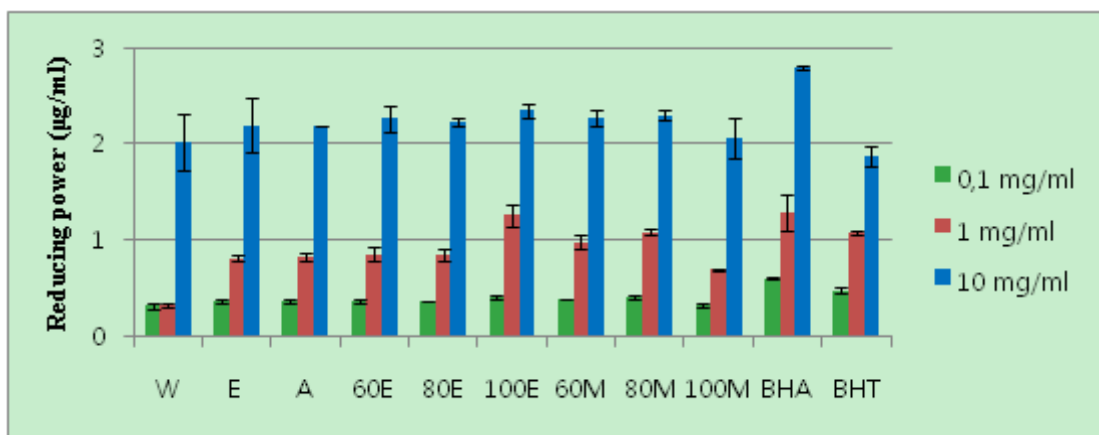


Fig. 1. Reducing power activities of extract from cortex moutan.

60% methanol (60M), 80% methanol (80M), 100% methanol (100M), 60% ethanol (60E), 80% ethanol (80E), 100% ethanol (100E), 100% acetone (A), aqueous (W) and 100% ethyl acetate (E).  
*B.s.*, *Bacillus subtilis* KTCT 1021; *K.p.*, *Klebsiella pneumonia* KCTC 2208;  
*S. a.*, *Staphylococcus aureus* KCTC 1916; *E.c* *Escherichia coli* KTCT 1924