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추출 용매에 따른 네팔 약용 식물의 항산화 활성

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Antioxidant Activities by Extract Solvents of Nepal Medicinal Plants

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Objectives

The objectives of present study was conducted to measure antioxidant activities by extract solvents of 8 medicinal plants collected from Nepal.

Materials and Methods

◦ Plant materials and sample preparation

The herbal plants of 8 species were collected from Nepal in 2004. Seeds, leaves, flowers or barks were extracted with distilled water at room temperature and 100℃ condition and methanol at 50℃ using shaking water bath for 12 hours, respectively. The solvent soluble parts were dried by rotary vacuum evaporator. Each residues were re-solublized in methanol for DPPH assay.

◦ Antioxidant activity

Antioxidant activities of the extracts were measured by scavenging the DPPH (1,1-diphenyl-2-picrylhydrazyl) free radical in process guided by its discoloration. Each sample stock solutions (0.75 mg/ml) were diluted to final concentrations of 300 ㎍/ml, 100 ㎍/ml and 33 ㎍/ml, in methanol. 150㎕ of 150㎛ DPPH methanol solution was added to 100㎕ of sample solutions of each different concentrations, and allowed to react at room temperature. After 30 min the absorbance values were measured at 518nm using microplate reader. IC_{50} value was calculated by the percentage antioxidant activity(AA) using the following formula : Inhibition concentration (%) = (1-D/C) × 100.

IC_{50} = (0.5-b)/a (㎍/㎖ ; concentration need to inhibit activity of free radical below 50%)

* D : absorbance of sample stock solution, C : absorbance of blank control

* a(slope) and b(intercept) were calculated by equation made step by step concentration(㎍/㎖; X) and inhibition concentration(%; Y) of sample stcok solution.

Results and Disscussion

◦ Extraction of eight medicinal plnats with 50℃ methanol solvent showed higher antioxdiant activities than that of extracted distilled water.

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◦ *Nelumbo nucifera* shown the highest antioxidant activities of 197.05 ㎍/㎖, 97.72

㎍/㎖ in extracting with distilled water at room temperature and 100℃ condition, respectively. Especially, *Gymnema sylvestre* and *Nelumbo nucifera* shown the highest antioxidant activities of 55.99 ㎍/㎖ and 83.91 ㎍/㎖ with methanol at 50℃.

Table 1. List of medicinal plants used in this experiment.

Scientific name	Common name	Local Name	Part used
Momordica charantia	Bitter Gourd	Ban Karela	Seed
Leucas cephalotes	Spiderwort	Dron pushpi	Flower
Rhododendron anthopogan D. Don	Rhododendron	Guras bokra	Bark
Gymnema sylvestre	Gurmar	Guyumar patta	Leaves
Nelumbo nucifera	Lotus	Kamal Gatta	Seed
Cymbopogon Citratus	Lemongrass	Lemongrass	Leaves
Elaeagnus umbellata Thunb	bodhi-druma	Nepali pipla	Flower
Artimisia indica Willd	Wormseed	Titay pati	Leaves

Table 2. Antioxidant activities by extract solvents of 8 medicinal plants.

Scientific name	Antioxidant activities (IC_{50} ; ㎍/㎖)		
	distilled water (room temp.)	distilled water (100℃)	methanol(50℃)
Momordica charantia	538.10±34.66	491.54±15.37	341.86±8.33
Leucas cephalotes	581.97±14.08	467.71±4.49	523.47±1.64
Rhododendron anthopogan D. Don	478.46±33.97	405.16±8.66	343.69±6.22
Gymnema sylvestre	1017.88±34.09	902.02±31.09	55.99±2.64
Nelumbo nucifera	197.05±6.87	97.72±3.50	83.91±1.45
Cymbopogon Citratus	1351.55±37.06	716.63±21.98	341.16±3.80
Elaeagnus umbellata Thunb	403.46±9.00	257.59±14.21	133.23±7.60
Artimisia indica Willd	420.03±1.82	653.64±22.61	403.68±10.02
Ascorbic acid	5.76±0.17		

Ascorbic acid : standard substance for antioxidant assay.