네팔 수집 약용식물의 항산화 및 항암 활성

¹단국대학교 식량생명공학과, ²국립농업과학원 농업생명자원부 장가희^{1*}, 이동진¹, 윤이관¹, 김헌웅¹, 추상미²

Antioxidant and Anticancer Activities of Medicinal Plants Collected from Nepal

¹College of Bio-resource Sciences, Dankook University

²National Academy of Agricultural Science, RDA

Ka-Hee Jang^{1*}, Dong-Jin Lee¹, Yi-Kwan Yoon¹, Heon-Woong Kim¹ and Sang-Mi Chu²

Objectives

In the country of Nepal, over 90% of the population depend on traditional plant remedies. The diverse regions, which vary from low altitude plains to rugged hills and mountains, together with the seasonal climatic changes(particularly the monsoon season) provide an abundance of medicinal plant diversity.

This study were conducted to find antioxidant and anticancer activities by 69 species medicinal plants collected from Nepal.

Materials and Methods

o Materials

The medicinal plants of 69 species were collected from Nepal in 2005. Samples were extracted with methanol at 40° C using sonicator for 30min. The extracts were dried by rotary vacuum evaporator.

o 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 (0.50mg/m ℓ) were diluted to final concentrations of 300 μ g/ml, 100 μ g/ml and 33 μ g/ml, in methanol. 150 μ l of 150 μ M DPPH methanol solution was added to 100 μ l of sample solutions of each different concentrations, and allowed to react at room temperature. After 30min the absorbance values were measured at 518nm using microplate reader.

Anticancer activity

To evaluate effects of extracts on the cell viability, a Cytotoxicity assay was performed. The Cells(HeLa cell lines; cervical cancer) were seeded onto 96-well plates at $10^4 \sim 10^5/\text{ml}$, then cultured in 5% CO₂ incubator at 37°C for 8h. 2, 10, 50, $200\mu\text{g}/\mu\text{l}$ of drugs were injected at each well and cultured at same condition for 16h. After cell seeding, $10\mu\text{l}$ of CCK-8 solution was added and cells were incubated for a further $1\sim4\text{h}$. The absorbance was measured at 450nm using microplate reader.

Corresponding author: 장가희 E-mail: hoiscape@dankook.ac.kr Tel: 041-550-3662

Results

o In the 69 Nepal medicinal species, 21 species among them showed in the $100 \sim 200$ $\mu g/m\ell$ antioxidant activities. Also, 35 species were higher activities than other species below $100\mu g/m\ell$. Especially, *Ocimum tenuiflorum* L.(Whole) $(6.28\mu g/m\ell)$ showed 4 times higher activity than Ascorbic acid $(28.16\mu g/m\ell)$.

 \circ Anticancer activities were evaluated in case selected 22 species showing high antioxidant activities. The cytotoxicity value of *Cymbopogon citratus*(Leaves) showed similarly with Doxorubicin. *Butea minor*(Fruit), *Cymbopogon citratus*(Leaves), *Zanthoxylum armatum* DC.(Fruit) inhibited proliferation under $2\mu g/\mu \ell$ low concentration. *Butea minor* (Fruit), *Zanthoxylum armatum* DC.(Fruit) were found to have high antioxidant and high anticancer activity.

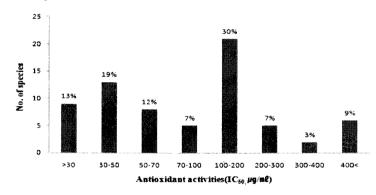


Fig. 1. Distribution of antioxidant activities from 69 Nepal medicinal plants.

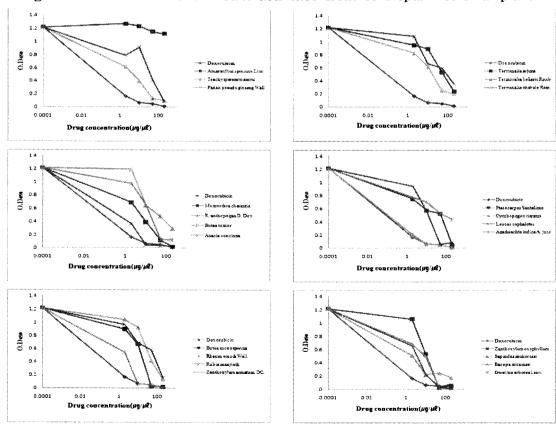


Fig. 2. Variation of cytotoxicities by concentration from extracts of selected 22 species.