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Comparison of Antioxidant Activities of the Hairy Roots of *Panax ginseng* among the Cell Lines

Hyun Jung Woo[1], Eun Young Kim[2], Byoung Hun Lee[1],
Dukcho Yang[2], Jin Kyu Kim[1]
[1]Korea Atomic Energy Research Institute,
[2]Chungbuk National University

Panax ginseng has been used for more than 2,000 years as a general tonic in a traditional oriental medicine. Nowadays, a wild ginseng has become extremely scarce and the ginseng supply depends almost exclusively on field cultivation, which is a time-consuming and labor-intensive process. Therefore, suspension culture of ginseng roots in bioreactors is viewed as a primary alternative for large-scale production and recently a protocol for the *in vitro* culture of *P. ginseng* has been developed.

The extract of the hairy roots of *P. ginseng* was kindly provided by the *Chungbuk National University*. The antioxidative effects of the extracts from the hairy roots of *P. ginseng* were analyzed with 2,2-diphenyl-1-picrylhydrazyl (DPPH) and comparisons were made on the percentage decrease in DPPH absorption at 100μg/ml of the extracts. The extracts of 4 and 6 cell lines resulted in a higher scavenging activity than the others. On the whole, the extracts from the heated groups of the hairy roots of *P. ginseng* showed a comparatively higher activity.

The cell viability was assessed by MTT (3-[4,5-dimethylthiazol - 2yl] - 2,5 - diphenyl - tetrazolium bromide; Sigma) assay after irradiation. For this experiments, B16 melanoma cells were used. After treatments with the extracts, the cells were cultured in CO_2 incubator for 2 hr prior to irradiation. The cell viability of the control and iradiation group were 100±3.28 and 77.3±7.99, respectively. The cell viability of the control groups of 5 and 6 lines were 113.8±4.88 and 115.2±9.77, respectively. The cell viability of the radiation groups of 9 and 10 lines were 80.1±7.39 and 75.3±3.13, respectively. From these experiments, it could be confirmed that the heated cell lines of the hairy roots of *P. ginseng* resulted in a higher antioxidant activities than the others.