

초음파 공정을 이용한 *Prunus persica* 추출물의 면역효능 증진

Enhancement of Immune Activities of *Prunus persica* Extracts
by Ultrasonification Extraction

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Objectives

This study, we were to enhance whitening effects of seeds of *Prunus persica* extracts by ultra high pressure extraction process

Materials and Methods

○ Materials

Prunus persica was extracted by water extraction at 100°C and 60°C, 70% ethyl alcohol extraction at 60°C and ultrasonification extraction at 130 KHz for 30 minutes at 60°C.

○ Methods

In order to measured immune activities, we performed MTT assay, SRB assay and T and B cell growth ratio.

Results

Prunus persica was extracted at 60°C and 130 KHz for 30 min. The extraction yield was 26.1% (v/v) which was higher than that from conventional extraction using water at 100°C for 12 hours. All of extracts at a concentration of 1.0 mg/ml showed relatively low cytotoxicity on human normal kidney cell (HEK293) in range of 15~25%. The inhibition ratios of several cancer cell lines such as human lung cancer cell A549, human gastric cancer cell AGS and human hepatocarcinoma cell Hep3B were measured using the sulforhodamine-B assay. The ultrasonification extracts of *Prunus persica* showed the highest cancer cell (A549,AGS,Hep3B) growth inhibition ratio as 77.3%, 79.1% and 75.9%, respectively. The immune B and T cell growth was improved by the ultrasonification extracts of *Prunus persica* up to 1.2×10^4 cells/mL and 1.0×10^4 cells/mL, respectively. The extract prepared also greatly increased the secretion of both IL-6 and TNF- α from ultrasonification process. This results can conclude that ultrasonification process effectively released active biomaterials which could important role in enhancing immune activity in the body.

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Table 1. The extraction yields of *Lithospermum erythrorhizon* according to different extraction processes.

<i>Prunus persica</i>				
Extraction condition [‡]	WE100	WE60	EE	UE
Yields(% w/w) [†]	20.2	17.3	17.5	26.1

[†] Mean values±SD from triplicate separated experiments are shown. Mean with difference letter (A-C) within extraction yields are significantly different at $p < 0.05$.

[‡] WE100 : water extraction at 100°C, WE60 : water extraction at 60°C EE : 70% ethyl alcohol extraction at 60°C UE : ultrasonification extraction at 130 KHz.

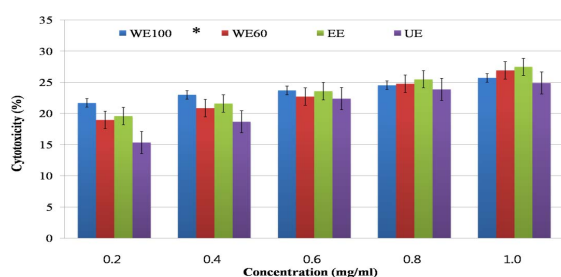


Fig. 1. The cytotoxicity of *Prunus persica* according to different extraction processes.

[†] Mean values±SD from triplicate separated experiments are shown. Mean with difference letter (A-D) within same concentration are significantly different at $p < 0.05$ and mean with difference letter (a-e) within same sample are significantly different at $p < 0.05$.

[‡] WE100: water extraction at 100°C; WE60: water extraction at 60°C; EE: 70% ethyl alcohol extraction at 60°C; UE : ultrasonification extraction at 130 KHz.

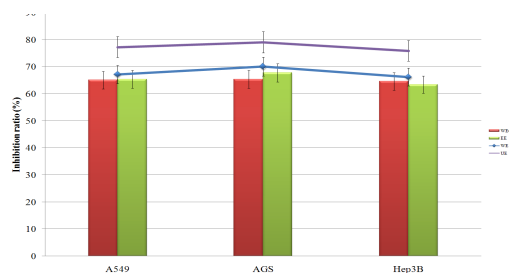


Fig. 2. The cancer cell growth inhibition ratio of *Prunus persica* according to different extraction processes.

[†] Mean values±SD from triplicate separated experiments are shown. Mean with difference letter (A-D) within same concentration are significantly different at $p < 0.05$ and mean with difference letter (a-c) within same sample are significantly different at $p < 0.05$.

[‡] See the Fig. 1. for abbreviation.

Table 1. The immune cell growth of *Prunus persica* according to different extraction processes.

<i>Prunus persica</i>				
	WE 100	WE 60	EE	UE
B cell	1.1×10^4	1.0×10^4	1.1×10^4	1.2×10^4
T cell	0.9×10^4	0.9×10^4	0.8×10^4	1.0×10^4

[‡] WE100 : water extraction at 100°C, WE60 : water extraction at 60°C EE : 70% ethyl alcohol extraction at 60°C UE : ultrasonification extraction at 130 KHz.

Reference

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