

## II-5 Enhancement of Whitening Effects of *Prunus persica* Extracts by Ultra High Pressure Extraction

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### 초고압 공정을 이용한 *Prunus persica* 추출물의 미백효과 증진

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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

*Prunus persica* was extracted by water extraction at 100°C and 60°C, 70% ethyl alcohol extraction at 60°C and ultra high pressure extraction at 500 MPa for 30 minutes at 60°C.

In order to measured whitening effects, we performed tyrosinase inhibitory activity and melanogenesis inhibitory activity using Clone M-3.

#### Results

- *Prunus persica* was extracted by ultra high pressure showed the highest tyrosinase inhibition ratio as 43%(w/w) in adding 1 mg/ml of concentration.
- Melanin inhibitory activities also showed the highest inhibition as 40%(w/w) in adding the extracts from ultra high pressure extraction.
- *Prunus persica* extracts by high pressure contain whitening activities substance and this substances was better eluted at high pressure.
- It was found that high pressure extraction efficiently destructed cell membranes of hard seeds of *Prunus persica* as well as extracts high amounts of active materials.

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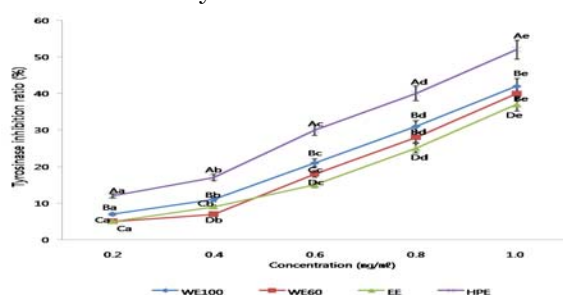
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**Table 1.** The extraction yields of *Prunus persica* according to different extraction processes.

<i>Prunus persica</i>	
Extraction condition <sup>‡</sup>	Yields(% , w/w) <sup>†</sup>
WE100	10.63 ± 0.33 A
WE60	9.72± 0.42 A
EE	8.5± 0.54 B
HPE	12.86± 0.16 C

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

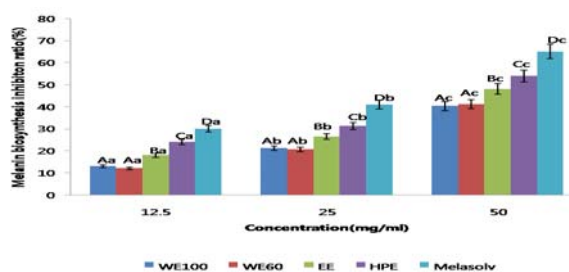
<sup>‡</sup> WE100 : water extraction at 100°C, WE60 : water extraction at 60°C EE : 70% ethyl alcohol extraction at 60°C HPE : high pressure extraction for 30 minutes at 60°C with 70% ethyl alcohol solvent.



**Fig. 1.** Tyrosinase inhibitory activities of the extracts of *Prunus persica* by different extraction processes and concentration.

<sup>†</sup> 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  $p < 0.05$ .

<sup>‡</sup> WE100: water extraction at 100°C; WE60: water extraction at 60°C; EE: 70% ethyl alcohol extraction at 60°C; HPE: high pressure extraction for 30 minutes at 60°C with 70% ethyl alcohol solvent.



**Fig. 2.** Melanin inhibitory activities of the extracts of *Prunus persica* by different extraction processes and concentration.

<sup>†</sup> 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  $p < 0.05$ .

<sup>‡</sup> See the Fig. 1. for abbreviation.

## References

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- Kim JS, Han YS, Kang MH. (2006). Identification of shikonin and its derivatives from *Lithospermum erthrorhizon*. *J Korean Soc Food Sci Nutr*. 35(2):177–181.
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