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# 초고압 공정을 이용한 *Curcuma longa* Linne 추출물의 미백효과 증진

강원대학교 생물소재공학과 : 김지선, 서용창, 최운용, 이춘근, 송치호, 이현용
세바바이오텍 : 임혜원
전라북도 농업기술원 : 안민실

# Enhancement of Ultra High Pressure Extracts Whitening Effect of *Curcuma longa* Linne leaves

[1]Department of Biomaterials Engineering, Kangwon National University, Chuncheon 200-701, Korea
[2]Shebah Biotech Co., Chuncheon Bioindustry Foundation Bio-1 #412, Chuncheon 200-702, Korea
[3]Jeonbuk Provincial ARES, Iksan 570-704, Korea
Ji Seon Kim[1], Yong Chang Seo[1], Woon Yong Choi[1], Choon Geun Lee[1], Chi Ho Song[1], Hye Won Lim[2], Min Sil Ahn[3], Hyeon Yong Lee[1*]

## 실험목적 (Objectives)

We performed this study in order to measure whitening effect of *Curcuma longa* Linne leaves which are the possibility of coming in contact frequently.

## 재료 및 방법 (Materials and Methods)

○ Materials

*Curcuma longa* Linne leaves was extracted by water extraction at 100℃ and 60℃, 70% ethyl alcohol extraction at 60℃ and ultra high pressure extraction at 500 ㎫ for 30 minutes at 60℃.

○ Methods

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

## 실험결과 (Results)

The extracts from HPE process showed the highest tyrosinase inhibition as 44%(w/w) in adding 1 mg/mL of the samples. The other extracts of WE100, WE60 and EE show relatively low activities such as 31.5, 28.6, 35.8%(w/w), respectively. Melanin inhibitory activities showed the highest inhibition ratio as 40%(w/w) for the case of adding the extracts from ultra high pressure extraction, and others of WE100, WE60 and EE were estimated as 36.8, 31.4 and 36.9%(w/w), respectively. In generally, improving of whitening activities of the extracts because of easy destruction of cell membranes and elution of high amounts of active contents.

주저자 연락처 (Corresponding author) : 이현용 E-mail : hyeonl@kangwon.ac.kr Tel : 033-256-4819

**Table 1.** The extraction yields of *Curcuma longa* Linne leaves according to different extraction processes.

| *Curcuma longa* Linne leaves | |
|---|---|
| Extraction condition‡ | Yields(%)† |
| WE100 | 12.61 ± 0.33 A |
| WE60 | 10.45 ± 0.42 A |
| EE | 9.51 ± 0.54 B |
| HPE | 13.88 ± 0.16 C |

† 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℃, WE60 : water extraction at 60℃ EE : 70% ethyl alcohol extraction at 60℃ HPE : high pressure extraction for 30 minutes at 60℃ with 70% ethyl alcohol solvent.

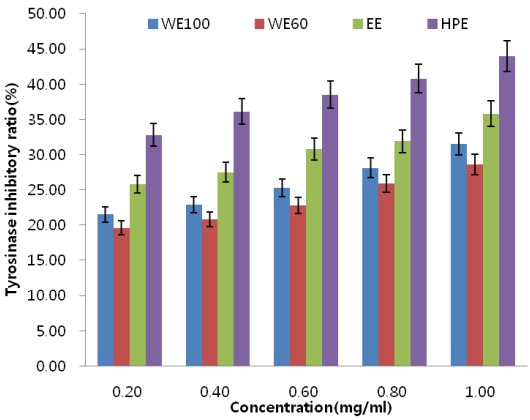


**Fig. 1.** Tyrosinase inhibitory activities of the extracts of *Curcuma longa* Linne leaves by different extraction processes and concentration.

† 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℃; WE60: water extraction at 60℃; EE: 70% ethyl alcohol extraction at 60℃; HPE: high pressure extraction for 30 minutes at 60℃ with 70% ethyl alcohol solvent.

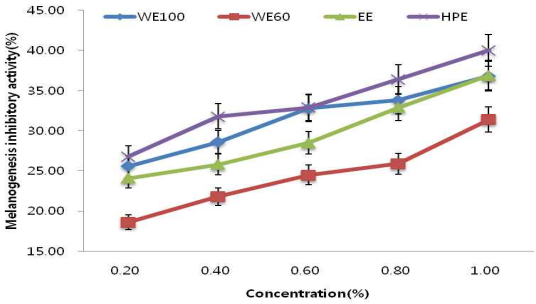


**Fig. 2.** Melanin inhibitory activities of the extracts of *Curcuma longa* Linne leaves by different extraction processes andconcentration.

† 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.