

나노입자화 한 복분자 추출물의 항산화 활성 및 피부 미백 효과
 강원대학교 : 정향숙*, 권민철, 한재건, 하지혜, 김영, 정명훈, 오성호, 김승섭, 이현용

Antioxidant Activities and Skin-Whitening Effects of Nano-encapsuled *Rubus coreanus* Miquel Extracts

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Objectives

This study was performed to investigate the enhancement of antioxidant activities and skin-whitening effects of *Rubus coreanus Miquel* extracts by nano-encapsulation. The destruction of ozone layers caused by air pollution is a worldly problem these days. Therefore, many people want to have effective natural whitening cosmetics. However, very few bioactivity studies have been reported on *R. coreanus*. To search the possibility of better cosmetic materials on medical crops, we analyzed the antioxidant activities and skin-whitening effects in nano-capsulated *R. coreanus*.

Materials and Methods

Antioxidant activities and skin-whitening effects of *R. coreanus* were investigated using the aqueous extracts at 60°C. The extracts were freeze-dried before use. Nano-particles were made of edible materials, lecithin and gelatine.

Results

80% of the nanoparticles were characterized in the range of 300nm by dynamic light scattering (DLS) and electron microscopy. The penetration into cells of extracts was observed by real time confocal microscope. *R. coreanus* extracts by nano-encapsulation was showed strongest free radical scavenging effect as 97.62% by adding 500 $\mu\text{g/ml}$ of sample, compared to the case of other conditions. Inhibition effect on melanin production test by Clone M-3 cells was also measured as 55.23% by adding extracts. We could consider that the water soluble extracts of *R. coreanus* could be definitely enhanced by nano-encapsulated as a potent natural resources for antioxidant and skin-whitening agent.

* 시험성적

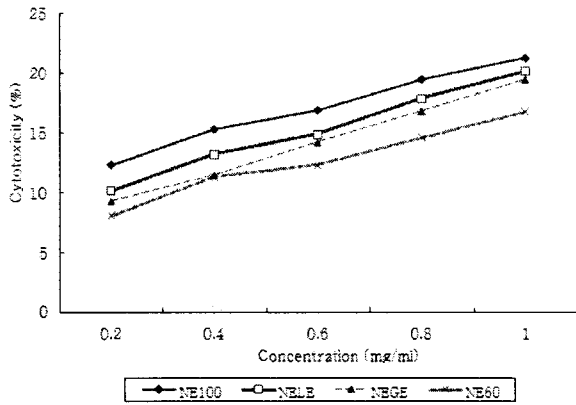


Fig. 1. Cytotoxicity of the nano particle of *R. coreanus* on normal cell line, HEK293

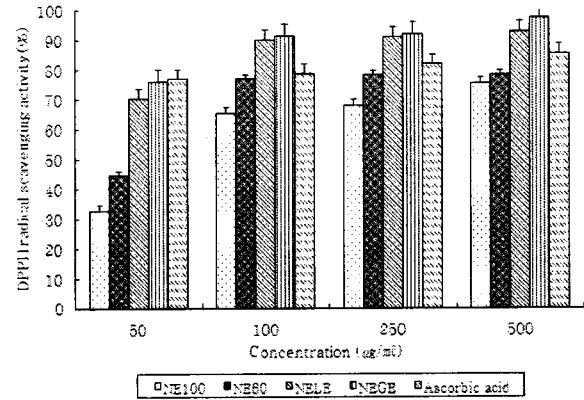


Fig. 2. DPPH radical scavenging activity(%) on *R. coreanus*

† NE60 : Normal Water Extraction(60°C)

†† NELE : Nano Encapsulation with lecithin in NE60

††† NEGE : Nano Encapsulation with gelatine in NE60

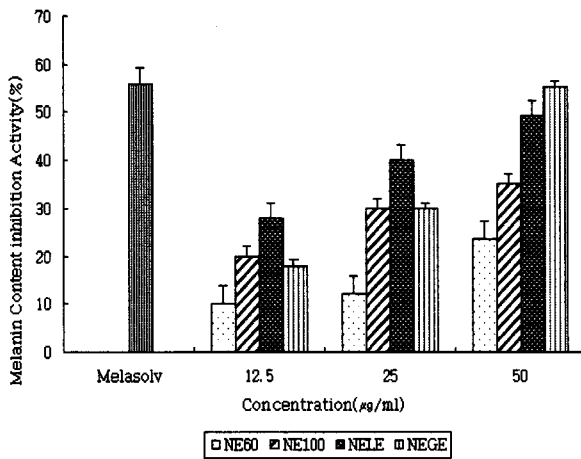


Fig. 3. Melanin contents inhibitory activity of the *R. coreanus* extracts in Clone M-3 cells.

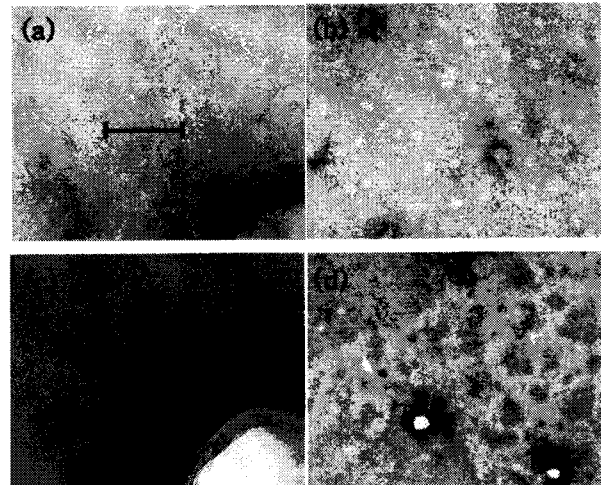


Fig. 4. The nanoparticles of (a),(b) lecithin and (c),(d) gelatine by TEM.

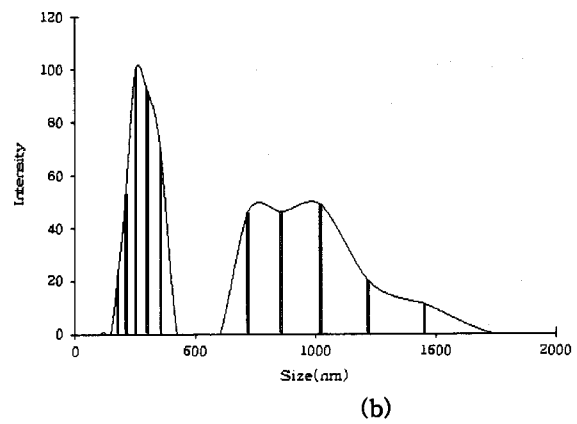
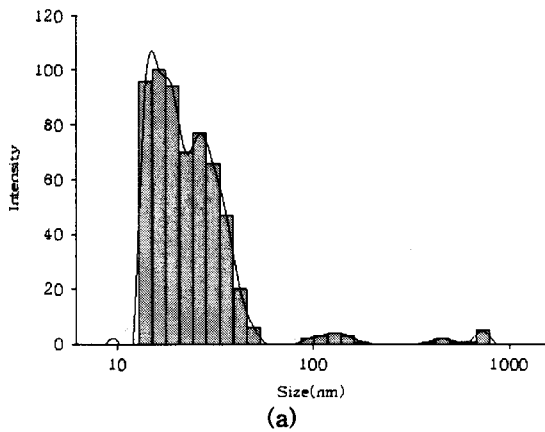


Fig. 5. Size distribution of nanoparticles with (a) lecithin and (b) gelatine using dynamic light scattering(DLS).