

Immuno-modulatory activities of *Scutellaria baicalensis* Georgi by high temperature fermentation of lactic acid bacteria

Hyeon-Yong Lee
Seowon University, Korea

Scutellaria baicalensis Georgi has been known to have various biological activities such as strong antioxidant activities and whitening effects, etc.; however, its applications have not been much increased due to the existence of small amounts of active compounds of Baicalein, and Baicalin. Most common extraction processes have been operated at 100 °C or 80 °C even though high operation temperature could generate large amounts of carbon dioxide into air as well as possibly degrade biological activities. In this work, high temperature lactic acid bacteria, *Bacillus coagulans* were cultivated to simultaneously ferment and extract *S. baicalensis* Georgi. The bacteria were grown with 15% (w/v) of powdered *S. baicalensis* Georgi at 6 °C for 10 days until pH of the medium was down to 4.5. After that, the culture broth contained 176 ppm of baicalein without further extracting the broth, which was higher than those from hot water extraction such as 17.6 ppm. It was also found that the broth showed very high antioxidant activities such as 23.7% of DPPH scavenging activity and the secretion of TNF- α , IFN- γ and IL-1 β from human T cells was measured as 0.76 ng/ml, 0.17 ng/ml and 2.35 ng/ml, respectively. It proves that simultaneous fermentation and extraction can greatly improve the elution yield of active components due to easily breaking down the hard outer shells of the plants and secondary bioconversion by lactic acid at relatively high environmental temperature. This simple system can be applied to most fermentation processes with high efficiency as well as low carbon dioxide emission that is most serious concern in cosmetic and food industries.

Biography

Hyeon-Yong Lee has completed his Ph.D. at the age of 27 years from Kansas State University, USA and worked at Invitron Corp. spun-off from Monsanto, St. Louis for three years. Now, he is a Professor in Seowon University, Korea and also a Director of Industry-Academy Foundation in same school. He has published more than 350 papers in reputed international and domestic journals and has also been serving as an editorial board member of repute.

Hyeonl@seowon.Ac.Kr