Commercialization of Valuable Plant Resources Using Bioreactor System

Sung Ho Son[1,2*], Seung Rho Yun[1], Jung A Kim[1], and Heungsop Shin[1]
[1]Yeongju, VitroSys Inc., Yeongju, [2]Dong Yang University

Plants are a de-facto biological factory that produces an immense array of fine chemical compounds which highly-valued in pharmaceutical, food, and bio-energy industries. Thus it is of huge business interest to grow plant cells, tissues, and even entire organisms at commercial-scale. However, there have been only a few success stories of plant cultures at industrial level. Recently, our group at VitroSys Incorporation has successfully implemented a large-scale bioreactor system for production of Korean Mountain Ginseng (*Panax ginseng* C. A. Meyer). Having proven of its medicinal superiority in traditional medicine, Korean Mountain Ginseng (KMG) demands high market value among Korean people that catapulted our drive to produce its biomass for commercialization. Technologically, we had to design a bioreactor system optimized for growing plant tissues that often form aggregates in growth media. Through many cycles of bioengineering efforts, we have achieved an output rate of over 700 kg of KMG biomass in every two months from culture using 20 tons of bioreactor, which is more than 100,000 dollars of market value. In this review, we will briefly summarize the technological aspect of commercial-scale production of plant biomass and its application toward useful secondary metabolites production.

* **corresponding author: Tel. 054-638-7142, e-mail: vitrosys@hanmail.net**