

Bacteriocin release protein mediated secretory expression of recombinant chalcone synthase in *Escherichia coli*

Abstract

Flavonoids are secondary metabolites synthesized by plants shown to exhibit health benefits such as anti-inflammatory, antioxidant, and anti-tumor effects. Thus, due to the importance of this compound, several enzymes involved in the flavonoid pathway have been cloned and characterized in *Escherichia coli*. However, the formation of inclusion bodies has become a major disadvantage of this approach. As an alternative, chalcone synthase from *Physcomitrella patens* was secreted into the medium using a bacteriocin release protein expression vector. Secretion of *P. patens* chalcone synthase into the culture media was achieved by co-expression with a psW1 plasmid encoding bacteriocin release protein in *E. coli* Tuner (DE3) plysS. The optimized conditions, which include the incubation of cells for 20 h with 40 ng/ml mitomycin C at OD600 induction time of 0.5 was found to be the best condition for chalcone synthase secretion.

Keyword: Bacteriocin release protein; Chalcone synthase; Extracellular expression