P20

Effect of Chemical Compounds to Quinine Alkaloids Content of Cinchona ledgeriana in Cell Suspension Culture.

Dedi Satriawan[1)], Diah Ratnadewi[1)], Sumaryono[2)]
[1)]Department of Biology, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University,Darmaga Campus, Bogor 16680, Indonesia
[2)]Indonesian Biotechnology Research Institute for Estate Crops, Jalan Taman Kencana No. 1, Bogor 16151, Indonesia

ABSTRACT

Quinine is used for tonic, appetite enhancer, antipyretic, antimalarial, cosmetic ingredients and tanning. Quinine can be obtained from the bark of seven or more years old *Cinchona* tree. Cell suspension culture is an alternative means to obtain secondary metabolites rapidly and continously. Quinine, one of alkaloid compounds, is expected to increase with the addition of abscisic acid (ABA) and paclobutrazol (PBZ) as growth inhibitors, tryptophan as a precursor and mannitol as an osmotic stress inducer. ABA was used at 1 and 3 ppm, PBZ at 5 and 7 ppm combined with 5.3 g/l mannitol, tryptophan at 0.2 and 2 ppm combined with 5.3 g/l mannitol. ABA at 1 and 3 ppm increased the cell suspension growth but reduced the content of quinine. PBZ at 7 ppm combined with 5.3 g/l mannitol and 20 g/l sucrose significantly reduced the cell suspension growth but remarkably increased quinine content, even higher than that was found in the bark of *Cinchona* tree in the field. Combination of mannitol and paclobutrazol was effective to inhibit the cell growth but enhance the production of quinine.

Keywords: cell suspension culture, *Cinchona*, mannitol, abscisic acid, paclobutrazol, tryptophan,quinine.