

Strategies to overcome foaming and wall-growth during the cultivation of *Morinda elliptica* cell suspension culture in a stirred-tank bioreactor

ABSTRACT

Strategies to overcome foaming and wall-growth during the cultivation of *Morinda elliptica* (Rubiaceae) cell suspension cultures in a stirred-tank bioreactor are described. Of all the strategies applied, only bubble-free aeration was successful in eliminating foaming by 100%. Despite the foaming effect of around 40% in G medium strategy with 0.012% (v/v) antifoam, the maximum dry cell weight attained (19.2 g l⁻¹) and anthraquinone (AQ) content (4.0 mg g⁻¹ DW) was nearly three times higher than that achieved in cultivation using 0.025% (v/v) antifoam. For continuous cell growth, the effect of inoculum age should also be considered when anti-foam is to be added. P medium strategy, without antifoam addition, not only promoted both growth (18 g l⁻¹) and AQ production (9.8 mg g⁻¹ DW), but also resulted in lower foaming and wall-growth (below 30% level), and higher foaming reduction (30-40%).

Keyword: Aeration mode; Anthraquinones; Medium strategy; *Morinda elliptica*; Stirred-tank bioreactor