

Enhanced anthraquinones production from adsorbent-treated *Morinda elliptica* cell suspension cultures in production medium strategy.

ABSTRACT

Continuous removal of anthraquinones (AQ) by Amberlite polymeric adsorbents (XAD-4, XAD-7 and XAD-16) through in situ adsorption in *Morinda elliptica* cell suspension cultures is studied for product recovery and improvement of the overall titre. Ethanol was the best eluting solvent for effective recovery of AQ from all adsorbents. Pre-treatment of XAD-4 with sodium acetate not only enhanced intracellular AQ, but also AQ release and subsequent recovery from the adsorbent. The addition of sodium acetate pretreated XAD-4 on day 18 for 6-day contact period, achieved comparable cell growth to control (41 g/L), but with 1.3-fold higher intracellular AQ (124 mg/g DW) and two-fold increase in extracellular AQ (14.3 mg/L). High amount of adsorbent and longer contact period for the cultures entering stationary growth phase, stimulated AQ release and recovery but at the expense of cell growth. With 5–8.3 g XAD-4 adsorbent per litre *M. elliptica* culture in production (P) medium, between 60 and 90% AQ was recovered from extracellular AQ after 24–26 days of culture period.

Keyword: *Morinda elliptica*, Anthraquinones, Cell culture, Amberlite polymeric adsorbent, In situ adsorption