

Title Food industry by-products as raw material for production of the biocontrol agent *Pantoea agglomerans* PBC-1

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Abstract

Pantoea agglomerans PBC-1 was originally isolated from the surface of oranges and can control postharvest pathogens in pome and citrus fruits. The use of a biocontrol agent depends on developing a culture medium which can produce large amounts at low cost. In this study, food industry by-products were investigated to assess their potential as a raw material for production of the biocontrol agent *Pantoea agglomerans* PBC-1. Carob extract, sugar beet molasses, orange by-products, and commercial sugar were used as carbon source. Viable populations were determined at the end of 24 h incubation at 30°C under orbital agitation at 150 rev min⁻¹. No differences were observed between the various media studied when compared with the standard media; the viable populations ranged between 1x10⁹ and 3x10⁹ cfu.ml⁻¹. The biomass produced in the different media was then evaluated against blue mould of apple fruit. Fruits were wounded artificially, treated with a *P. agglomerans* suspension at 1x10⁸ cfu.ml⁻¹ and infected with *Penicillium expansum* at 1x10⁴ spores.ml⁻¹. The greatest reduction in lesion diameter (99%) and incidence (95%) were obtained by treating with *P. agglomerans* produced with carob extract. The biomass productivity and efficacy against the pathogen obtained with the different by-products show that these industrial by-products can be used efficiently to produce biocontrol agents.