

**Title** Production of biocontrol agent *Pantoea agglomerans* PBC-1 with food industry by-products  
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### Abstract

Biocontrol agents can be effective alternatives to fungicides in controlling fungal diseases if high quality stable products can be produced economically. The composition of the fermentation medium affects volumetric productivity and product yield, but cost of the medium must also be kept as low as possible to ensure the economic success of the process, especially when the final product will be applied in quantities and must be compared with the broad spreading chemical fungicides. The culture media must supply the microbial growth and produce effective and high amount of biomass at low cost. In this regard, utilization of industry by products as potential raw material for production of biocontrol agents is a needful and eco-friendly venture. In this study, food try by-products were investigated to assess their potential as a raw material for production of the biocontrol agent *Pantoea agglomerans* PBC-1, a biocontrol agent originally isolated from the surface of oranges, efficient in control postharvest pathogens in Pome and citrus fruits. Carob, sugar beet, and citrus by-products were used as carbon source. The biomass produced in the different media was then evaluated against blue mould in pome fruit. The viable populations and the biomass productivity ranged between  $1-3 \times 10^9$  cfu.ml<sup>-1</sup> and 0.10-0.17 g.l<sup>-1</sup>.h<sup>-1</sup>, respectively. The greatest reduction in lesion diameter (99%) and incidence (95%) were obtained by treating with *P. agglomerans* ( $1 \times 10^8$  cfu.ml<sup>-1</sup>), 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.