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Effects of culture media on the kinetics of infective juvenile production of the
entomopathogenic nematode *steinernema carpocapsae*, in submerged monoxenic culture

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Abstract

The effects of culture medium formulations on the kinetics of infective juvenile (IJ) production of the entomopathogenic nematode *Steinernema carpocapsae*, were studied in submerged monoxenic culture in orbitally agitated cylindrical bottles using four culture media containing agave juice from *Agave* spp. among other ingredients. The IJ production kinetics was well modelled through a re-parameterised 3-parameter Gompertz model with kinetic parameters: IJ-lag phase, t_{lag} (d), maximum IJ-stage conversion rate, m_{max} ($[d(CIJ/CIJ,0)/dt]_{max}$) (d^{-1}), and IJ-multiplication factor, $(CIJ/CIJ,0)_{max}$ (-), with values within the ranges $14 d < t_{lag} < 16 d$; $33 d^{-1} < m_{max} < 241 d^{-1}$ and $66 (-) < (CIJ/CIJ,0)_{max} < 611 (-)$, respectively. It was apparent that maximum values of m_{max} and $(CIJ/CIJ,0)_{max}$ were obtained in medium A4 (27.6 % (v/v) agave juice, 1.7 % (w/v) yeast extract, 1.2 % (w/v) dried egg yolk, 2.5 % (v/v) corn oil). Also, the maximum average IJ concentration (249,444 per mL) was achieved in A4-fermentations.

Keywords

entomopathogenic nematode, culture medium, fat/carbohydrates ratio, carbohydrates/protein ratio, agave juice, modelling.

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