

Growth and lovastatin production by *Aspergillus terreus* under different carbohydrates as carbon sources

ABSTRACT

Carbon source is a key component of metabolites synthesis in microorganisms. This work examined the effects of selected carbon sources in the form of carbohydrates, on the growth of *Aspergillus terreus* ATCC 20542 and the production of lovastatin. Slowly metabolised carbohydrates, such as D-galactose (consumption rate, $r=3.11$), produced a high microbial biomass, X_{FINAL} (9.44 g/L) compared to other carbohydrates, but with a low biomass yield coefficient ($Y_{LOV/X}=1.68$). In contrast, D-ribose ($Y_{LOV/X}=\text{=}$) which showed moderate biomass growth ($X_{FINAL}=8.78$ g/L) and consumption rate ($r=5.44$ g/day), produced the highest lovastatin amount (51.81 mg/L, day 6). These indicate little correlation between biomass growth and lovastatin production. Notably, culture consisting of pellets with short hairy surface feature is associated with enhanced lovastatin production. Our findings suggest that the production of lovastatin by *Aspergillus terreus* is highly influenced by the choice of carbohydrates that will shape the pellet morphology rather than the rate of carbohydrates metabolism.

Keyword: *Aspergillus terreus*; Carbon source; Lovastatin; Fermentation; Filamentous fungi