

The investigation of media components for optimal metabolite production of *Aspergillus terreus* ATCC 20542

ABSTRACT

Purpose: This study aimed to assess the effect of nitrogen, salt and pre-culture conditions on the production of lovastatin in *A. terreus* ATCC 20542. **Methods:** Different combinations of nitrogen sources, salts and pre-culture combinations were applied in the fermentation media and lovastatin yield was analysed chromatographically. **Result:** The exclusion of $\text{MnSO}_4 \cdot 5\text{H}_2\text{O}$, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ and $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ were shown to significantly improve lovastatin production (282%), while KH_2PO_4 , $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, and NaCl and $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ were indispensable for good lovastatin production. Simple nitrogen source (ammonia) was unfavourable for morphology, growth and lovastatin production. In contrast, yeast extract (complex nitrogen source) produced the highest lovastatin yield (25.52 mg/L), while powdered soybean favoured the production of co-metabolites ((+)-geodin and sulochrin). Intermediate lactose: yeast extract (5:4) ratio produced the optimal lovastatin yield (12.33 mg/L) during pre-culture, while high (5:2) or low (5:6) lactose to yeast extract ratio produced significantly lower lovastatin yield (7.98 mg/L and 9.12 mg/L, respectively). High spore concentration, up to 107 spores/L was shown to be beneficial for lovastatin, but not for co-metabolite production, while higher spore age was shown to be beneficial for all of its metabolites. **Conclusion:** The findings from these investigations could be used for future cultivation of *A. terreus* in the production of desired metabolites.

Keyword: *Aspergillus terreus*; Lovastatin; (+)-geodin; Sulochrin; Media