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Optimization of submerged culture conditions for mycelial growth and exo-polysaccharide Production by *Paecilomyces tenuipes* C240

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This study is concerned with optimization of submerged culture conditions for the mycelial growth and exo-polysaccharide production in *Paecilomyces tenuipes* C240. The one-factor-at-a-time and orthogonal matrix methods were applied to the optimization study. Among these variables of medium components, glucose, KNO₃, K₂HPO₄ and MgSO₄ · 5H₂O were identified to be the most suitable carbon, nitrogen and mineral sources, respectively. And the optimal temperature and initial pH for mycelial growth and exo-polysaccharide production were found to be 28 °C and 6.0, respectively. The effects of media composition on the mycelial growth of *Paecilomyces tenuipes* C240 were in the order of glucose > K₂HPO₄ > KNO₃ > MgSO₄ · 5H₂O, and those on exo-polysaccharide production are in the order of glucose > K₂HPO₄ > MgSO₄ · 5H₂O > KNO₃. The optimal concentration for the enhanced production were determined as 4 g/l glucose, 0.6 g/l KNO₃, 0.1 g/l K₂HPO₄ and 0.1 g/l MgSO₄ · 5H₂O for mycelial yield, and 3 g/l glucose, 0.4 g/l KNO₃, 0.1 g/l K₂HPO₄ and 0.1 g/l MgSO₄ · 5H₂O for exo-polysaccharide production, respectively. The subsequent verification experiments confirmed the validity of the models. This optimization strategy in shake flask culture led to a mycelial yield of 10.2 g/l, and exo-polysaccharide production of 1.9 g/l, respectively, which were considerably higher than those obtained in the previous studies.