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Evidence of phenylalanine pathway in resveratrol-producing *Alternaria* sp.: Substrate flow and enzyme activities

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Alternaria sp. MG1 is an endophytic fungus isolated from grape and has capability in producing resveratrol, indicating the occurrence of resveratrol biosynthesis pathway in this strain. Different substrates and C¹³-glucose were used in the culture of *Alternaria* sp. MG1 resting cells. The intermediates accumulated during the culture were identified using high performance liquid chromatography (HPLC) and mass spectrograph. During the biotransformation, activities of related enzymes, including phenylalanine ammonia-lyase (PAL), trans-cinnamate 4-hydroxylase (C4H) and 4-coumarate-CoA ligase (4CL) were analyzed and tracked. The reaction system contained 100 mL 0.2 mol/L phosphate buffer (pH 6.5), 120 g/L *Alternaria* sp. MG1 cells, 0.1 g/L MgSO₄ and 0.2g/L CaSO₄ and different substrates according to the experimental design. The biotransformation was carried out for 21 hours at 28°C and 120 rpm. Resveratrol formation was identified when phenylalanine, tyrosine, cinnamic acid and p-coumaric acid were separately used as only substrate. Accumulation of cinnamic acid, p-coumaric acid and resveratrol and activities of PAL, C4H and 4CL were identified and changed in different trends during transformation with phenylalanine as only substrate. C¹³ isotope analysis showed 1 or 7 carbon atoms were transferred from glucose to the intermediates and substrates in phenylalanine pathway, indicating the occurrence of this pathway in *Alternaria* sp.

Biography

Junling Shi completed her Ph.D. from Northwest Agriculture and Forestry University and postdoctoral studies from Jiangnan University. She is a Professor of Northwestern Polytechnical University now. She has published more than 30 papers in reputed journals. Her major research field is endophytic fungi and fungal metabolism.

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