

**Title** Accumulation of lignin and involvement of enzymes in bamboo shoot during storage  
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#### **Abstract**

Fresh bamboo (*Phyllostachys praecox* f. *prevernalis*.) shoots were harvested, and the changes of firmness, electrical conductivity (EC), respiration rate, ethylene production, total sugars (TS), reducing sugars (RS), lignin and cellulose content and the activity of phenylalanine ammonia lyase (PAL), cinnamyl alcohol dehydrogenase (CAD) and peroxidase POD were investigated during storage at 2 or 20°C for 30 or 12 days, respectively. EC increased quickly, with a more rapid rate at higher temperature, but it increased sharply after 24 days at 2°C. Respiration rate increased slowly at 20°C, while at low temperature (2°C) respiration rate and ethylene production significantly decreased. There was a quickly decrease in TS content at 20°C. Shoot firmness, lignin and cellulose increased and accelerated by higher storage temperature during storage at 2 or 20°C. Shoots firmness showed a positive correlation with accumulation of lignin and cellulose in the flesh. Among the enzymes associated with lignin synthesis, PAL and CAD activity showed a persistent rise over the whole 12 days, while POD activity increased rapidly within 6 days during storage at 20°C, followed by a slowly decrease. Accumulation of lignin in flesh tissue was also positively correlated to activity of PAL, CAD and POD. Our results suggest that the increase in firmness of bamboo shoots during storage is a consequence of tissue lignification, a process associated with increases in PAL, CAD and POD activity.