

Abstract

Conquering rapid postripeness and deterioration of *Agaricus bisporus* is quite challenging. We previously observed that methyl jasmonate (MeJA) pretreatment postponed the deterioration of *A. bisporus*, but the mechanism is unknown. Here, a nontargeted metabolomics analysis by ultrahigh-pressure liquid chromatography-quadrupole-time-of-flight tandem mass spectrometry (UHPLC-QTOF-MS/MS) revealed that MeJA increased the synthesis of malate by inhibiting the decomposition of fumarate and *cis*-aconitate. MeJA maintained energy supply by enhancing ATP content and energy charge level and improving hexokinase and glucose-6-phosphate dehydrogenase activities as well. These results promoted ATP supply by maintaining glycolysis, the TCA cycle, and the pentose phosphate pathway. In addition, we revealed that the delayed deterioration was attributed to MeJA treatment which stimulated the energy status of *A. bisporus* by reducing the respiration rate and nutrient decomposition, thus maintaining energy production. Our results provide a new insight into the role of MeJA treatment in delaying deterioration of *A. bisporus* through ATP production and supply.