Abstract

Application of an aqueous solution of aminoethoxyvinylglycine (AVG) ([S]-*trans*-2-amino-4-(2-aminoethoxy)-3-butenoic acid hydrochloride) to the locular surface of excised 1 cm diameter × 4 mm thick pericarp discs of pre-climacteric, mature-green tomato (*Lycopersicon esculentum* Mill., cv. Castlemart) fruit significantly reduced both ethylene and protein biosynthesis in a log-linear fashion. Exposure to 1.0 μL L^{-1} 1-MCP (SmartFresh™) increased ethylene production by about 30% at each AVG concentration. Incorporation of H^3-leucine into protein in tomato pericarp discs was reduced 65%, 76%, and 93% by the application of 20 μL of 0.1, 3.0, and 10 mM AVG, respectively. In comparison, ethylene production was reduced 57%, 73%, and 89% by 20 μL 0.1, 3.0, and 10 mM AVG, respectively. Application of similar AVG concentrations had no significant effect on CO_2 production by the tissue. A tissue concentration of 6 μM AVG (16-fold dilution of the 0.1 mM applied concentration: 20 μL in 0.3 g of tissue) significantly reduced both ethylene and protein biosynthesis. The ability of AVG to reduce ethylene production was highly correlated (R^2 = 0.98) to its ability to reduce protein synthesis in both air and 1-MCP treated pre-climacteric tomato fruit tissue. Some of the physiological effect of AVG may be dependent on it ability to alter protein synthesis.