

Title 1-Alkenes: Ethylene action compounds or ethylene competitive inhibitors in plants
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Abstract

Ethylene, propene, 1-butene, 1-pentene, 1-hexene, 1-octene, 1-decene, and 1-dodecene were tested as ethylene action compounds and also as ethylene competitive inhibitors using a pea growth and a banana ripening assay method. Ethylene, propene, and 1-butene gave a growth inhibition ethylene response in etiolated pea seedlings. 1-Pentene, 1-hexane, 1-octene, 1-decene, and 1-dodecene were inactive as ethylene action compounds but were active as competitive inhibitors of ethylene action in peas. 1-Butene was also active as a competitive inhibitor of ethylene action in pea growth. Ethylene and propene gave a typical ethylene ripening response in bananas, but 1-butene did not induce ripening. It did compete with ethylene and inhibited ethylene action in bananas. 1-Pentene, 1-hexene, 1-octene, 1-decene, and 1-dodecene also were inactive in mimicking ethylene action in bananas, but were competitive inhibitors of ethylene action, and their effectiveness increased as the chain length increased. It is clear that ethylene action inducing compounds and ethylene action competitive inhibitors are reaching the receptor, and the binding site does not appear to be restricted.