

# Structure-Activity Relationship of Acetylenes from Galls of *Hedera rhombea* as Plant Growth Inhibitors

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The structure-activity relationship of 12 isolated acetylenes from galls of *Hedera rhombea* (Araliaceae) induced by *Asphondylia* sp. (Cecidomyiidae) and their derivatives has been studied for the inhibition of the shoot and root growth of rice, perennial ryegrass, cockscomb, lettuce, and cress. Almost all acetylenes generally showed growth inhibitory activity. The diacetylenes exhibited higher activity than the monoacetylenes, suggesting that a conjugated diyne segment is essential for the activity. On the other hand, the acetylenes with a nonoxidated methylene group at C-8 showed stronger activity comparing with those possessing hydroxy and acetoxy groups at C-8. Furthermore, it has been demonstrated that the acetylenes bearing a terminal olefinic group at C-16,C-17 enhanced the activity. It is thus clarified that important sites for the activity of the acetylenes from galls of *H. rhombea* are a conjugated diyne and a terminal olefinic group connecting to the aliphatic chain and that less oxidated compounds show more activity.

*Key words:* *Hedera rhombea*, Acetylenes, Structure-Activity Relationship