

In Vivo Fungicidal activity of *Coptis japonica* root-derived isoquinoline alkaloids against phytopathogenic fungi

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Fungicidal activities of *Coptis japonica* (Makino) extracts and their active principles were determined against *Botrytis cineria*, *Erysiphe graminis*, *Phytophthora infestans*, *Puccinia recondita*, *Pyricularia grisea*, and *Rhizoctonia solani* using a whole plant method *in vivo*, and compared with natural fungicides. Responses varied with the plant pathogen tested.¹⁻⁶⁾ At 2,000 mg/l, the chloroform and butanol fractions obtained from methanolic extracts of *C. japonica* exhibited strong/moderate fungicidal activities against *B. cinerea*, *E. graminis*, *P. recondita*, and *Py. grisea*. Two active constituents from the chloroform fractions and one active constituent from the butanol fractions were characterized the isoquinoline alkaloids, berberine chloride, palmatine iodide, and coptisine chloride as spectral analysis, respectively. Berberine chloride has an apparent LC₅₀ value of approximately 190, 80, and 50 mg/l against *B. cinerea*, *E. graminis*, and *P. recondita*, respectively, and coptisine chloride has a LC₅₀ value of 210, 20, 180, and 290 mg/l against *B. cinerea*, *E. graminis*, *P. recondita*, and *Py. grisea*, respectively. Furthermore, LC₅₀ value of palmatine iodide is 160 mg/l against *Py. grisea*. These isoquinoline alkaloids were more potent than the natural fungicides, curcumin and emodin. These compounds isolated from *C. japonica* may be useful as leads in developing new types of natural fungicides for controlling *B. cinerea*, *E. graminis*, *P. recondita*, and *Py. grisea* on crops.

References

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