

A211 Antifungal activity of three plants from Nor-Yauyos (Peru)

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Chuquiraga spinosa (R. et P.) D. Dou, *Jungia paniculata* A. Gray and *Perezia pinnatifida* Lag. (Asteraceae) are medicinal plants widespread found in the Andes between 2500 and 3500 m of altitude. Dichloromethane, methanol and water extracts were prepared using the whole plant of *C. spinosa* and *J. paniculata* and roots of *P. pinnatifida*. Extracts of three plants have been evaluated for their antifungal activity against *Cladosporium cucumerinum*, *Alternaria alternata*, *Botrytis cinerea*, *Penicillium expansum* and *Rhizopus stolonifer*.

Direct bioautography, where the microorganisms grow directly on the thin layer chromatography (TLC) plate, is one of the most efficacious assay for the detection of antifungal compounds against *C. cucumerinum*. Dichloromethane extract of *P. pinnatifida* roots (100 µg) and water extract of the whole plant of *C. spinosa* (100 µg) showed high antifungal activity against this plant pathogenic fungi.

Strains of *A. alternata*, *P. expansum*, *B. cinerea* and *R. stolonifer* were grown in PDA (potato dextrose agar) media. All media were autoclaved and inoculated with two different doses of extracts (250 and 1000 ppm). None of the extracts showed significant inhibition against *A. alternata* and *P. expansum*. All the extract presented activity against *B. cinerea* being the dichloromethane extract of *P. pinnatifida* the most active. Dichloromethane and methanol extracts of *P. pinnatifida* also inhibited the growth of *R. stolonifer*.

A212 Pronounced antifungal activity of *Aphanamixis polystachya* (Meliaceae) extracts due to nymania 1 and the novel diterpene-acid vienkosaic-acid

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In a preliminary screening, the chloroform fraction of the methanolic extracts from the fruit, roots, seeds, bark and leaves of *Aphanamixis polystachya* (Wall.) R. N. Parker displayed notable antifungal activities against the phytopathogenic fungus *Botrytis cinerea*, comparable or even excelling those of the commercial fungicides Benlate™ and Blasticidin S™. For these tests, a microplate-scale germtube growth inhibition assay with a series of 12 concentrations was used (1). Bioassay-guided isolation of the active compounds from the two most active organ extracts, fruit and roots, using medium pressure liquid chromatography (MPLC), HPLC and TLC, led to the isolation a diterpene-acid and a highly active limonoid. The structures of the limonoid nymania 1 (2), the main active substance from the fruit, and the novel diterpene-acid vienkosaic-acid (11-(2',2'-dimethylfuran-3'-on-5'-yl)-3,7,11-trimethyl-2,6,20-undecatrienoic-acid) from the roots were established on the basis of NMR-spectroscopic methods (HSQC, HMBC, NOESY, APT, DQF-COSY). Nymania 1 which had previously not been identified in this species, was shown to possess exceptionally strong antifungal effects against *B. cinerea* with an EC₅₀ value of 0.07 and an EC₉₀ of 0.86 µg/ml, followed by the hitherto unknown substance vienkosaic-acid, with EC₅₀ and EC₉₀ values of 1.82 and 145.60 µg/ml respectively.

References: 1. Hadacek, F. and Greger, H. (2000), *Phytochem. Anal.* 11: 1-11, 2. MacLachnan et al. (1982) *Phytochemistry*, 21: 1701-1703