

## Identification and antibacterial activity of phenolic compounds in crude extracts of *Piper sarmentosum* (Kadok)

### ABSTRACT

*Piper sarmentosum* L., locally known as Kadok, is a tropical plant that grows in the wild and in cultivation in Southeast Asia. The plant is known for its medicinal properties and variety of active chemical constituents. The antibacterial capacity of methanolic leaf extracts (25, 50, 100, and 200 mg/mL) of *P. sarmentosum* and of phenolic standards was screened against gram-negative bacteria *Pseudomonas fuscovaginae* and *Xanthomonas oryzae* pv. *oryzae*, two major pathogens of rice (*Oryza sativa* L.), by agar-well diffusion and disc-diffusion assays, and compared with that of streptomycin sulfate (30 µg/ml). The inhibition zones for the extracts ranged from 9.0 to 19.33 mm; the minimum inhibitory concentration for both *P. fuscovaginae* and *X. oryzae* was 12.5 mg/mL and the minimum bactericidal concentrations were 25.0 and 12.5 mg/mL, respectively. Four phenolic compounds (gallic acid, tannic acid, quercetin, and naringin) were identified and quantified by reversed phase high-performance liquid chromatography diode-array detection (HPLC-DAD). Antibacterial assays indicated that these four compounds were potential natural antimicrobial agents against *P. fuscovaginae* and *X. oryzae*. The results presented here suggest that leaf extract of *P. sarmentosum* has strong potential to serve as a novel bactericide for disease suppression in crop plants.

**Keyword:** Agar well diffusion assay; Leaf extract; Minimal inhibition concentration; *P. fuscovaginae*; Phenolic compounds; *X. oryzae* pv. *oryzae*