

## Chemical characterization and biological activity of leaf extracts from *Piper aduncum* and *Grias neuberthii*

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### Abstract

Leaves from *Piper aduncum* and *Grias neuberthii* are used in Ecuadorian Amazon communities as traditional medicine for their antiseptics and antihemorrhagic agents. It also was reported that *P. aduncum* and *G. neuberthii* exhibit antimicrobial activity. The present study was designed to elucidate the chemical composition and biological properties of methanolic extracts of *Piper aduncum*, and *Grias neuberthii* leaves from the Amazon region in Ecuador. Leaf samples of both plants were collected in Tena, Ecuador and subsequently subjected to a 15-day maceration process in methanol. The extracts were lyophilized, and the resulting extract was employed both in chemical characterization, and biological activity assessment. In the case of biological activity, we conducted an exploratory assay to evaluate the antimicrobial activity of the samples against three model microorganisms and three antibiotic resistant bacteria strains, as well as a minimal inhibitory concentration assay, finding that extracts from both plants *P. aduncum* and *G. neuberthii* have antimicrobial activity against all 6 microorganisms employed in this study, including *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Bacillus subtilis* antibiotic resistant strains. On the other hand, the chemical characterization was performed through a phytochemical screening, based on colorimetric assays to identify the presence of phytochemical compounds in *P. aduncum* and *G. neuberthii* extracts, pointing out the presence of tannins, flavonoids, saponins, coumarins, and polyphenols. Results indicate the presence of a wide spectrum of secondary metabolites. However, additional assessments are required to draw more precise conclusions. Moreover, the antimicrobial activity of both plants against ampicillin resistant strains suggests the presence of compounds of possible therapeutic interest.

### Key words:

*Piper aduncum*, *Grias neuberthii*, antimicrobial, phytochemistry, antibiotic resistance.