

## *In vitro* Antioxidant and Antimicrobial Activities of *Costus spicatus* Swartz used in Folk Medicine for Urinary Tract Infection in Brazil

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**SUMMARY.** The aim of this study was to investigate the chemical composition and to evaluate the *in vitro* antimicrobial and antioxidant activities of *Costus spicatus*. Appreciable amount of total phenolic content and total flavonoid content was detected in *C. spicatus*. LC-MS/MS revealed the presence of ferulic and caffeic acids and the flavonoids quercetin and apigenin. *C. spicatus* extracts exhibited antioxidant activity with a high correlation ( $r = 0.98$ ) with the presence of flavonoids and phenolic compounds. Antimicrobial effects expressed by the minimum inhibitory concentration (MIC) revealed that acetone leaves extract exhibited strong antimicrobial activity (MICs of 0.5 mg/mL) against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*. The results showed good correlation between the antioxidant and antimicrobial activity with the presence of total phenolic and flavonoid content which may explain the popular use of *Costus spicatus*.

**RESUMEN.** El objetivo del estudio fue investigar la composición química y evaluar las actividades antimicrobianas y antioxidantes *in vitro* de *Costus spicatus*. Se detectó una cantidad apreciable de contenido fenólico total y el contenido total de flavonoides. La LC-MS/MS reveló la presencia de ácidos ferúlico y cafeico y de los flavonoides quercetina y apigenina. Los extractos de *C. spicatus* exhibieron actividad antioxidante con una alta correlación ( $r = 0,98$ ) con la presencia de flavonoides y compuestos fenólicos. Los efectos antimicrobianos expresados por la mínima concentración inhibitoria (MCI) revelaron que el extracto acetónico de hojas exhibió fuerte actividad antimicrobiana (MCI = 0,5 mg/mL) frente a *Staphylococcus aureus*, *Escherichia coli* y *Candida albicans*. Los resultados mostraron una buena correlación entre la actividad antioxidante y antimicrobiana con la presencia de fenoles totales y el contenido de flavonoides, lo que puede explicar el uso popular de *Costus spicatus*.

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**KEY WORDS:** antibacterial, antioxidant, flavonoids, monkey cane, phenolic compounds, urinary tract infections.

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