

## Assessment of total phenolic, antioxidant, and antibacterial activities of *Passiflora* species

### ABSTRACT

This study focused on total phenolic content (TPC) and antioxidant and antibacterial activities of the leaves and stems of *Passiflora quadrangularis*, *P. maliformis*, and *P. edulis* extracted using three solvents: petroleum ether, acetone, and methanol. The maximum extraction yields of antioxidant components from the leaves and stems were isolated using methanol extracts of *P. edulis* (24.28%) and *P. quadrangularis* (9.76%), respectively. Among the leaf extracts, the methanol extract of *P. maliformis* had the significantly highest TPC and the strongest antioxidant activity, whereas among the stem extracts, the methanol extract of *P. quadrangularis* showed the highest phenolic amount and possessed the strongest antioxidant activity. The antibacterial properties of the *Passiflora* species were tested using the disc diffusion method against 10 human pathogenic bacteria. The largest inhibition zone was observed for the methanol extract of *P. maliformis* against *B. subtilis*. Generally, extracts from the *Passiflora* species exhibit distinct inhibition against Gram-positive but not Gram-negative bacteria. Based on the generated biplot, three clusters of bacteria were designated according to their performance towards the tested extracts. The present study revealed that methanol extracts of the *Passiflora* contain constituents with significant phenolic, antioxidant, and antibacterial properties for pharmaceutical and nutraceutical uses.

**Keyword:** Total Phenolic Content (TPC); Antioxidant activity; Antibacterial activities; *Passiflora*; Phenols