

# Antioxidant and Antimicrobial Activity in Flower and Stem of Banana (*Musa acuminata* ‘Berangan’ and *Musa X paradisiaca* ‘Nangka’) †

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† Presented at International e-Conference on Bioengineering for Health and Environment (ICBHE 2020)

Received: 5.07.2020; Revised: 10.07.2020; Accepted: 12.07.2020; Published: 15.07.2020

**Abstract:** Banana plant (*Musa spp.*) is exploited in many researches as a potential source of therapeutic options to treat diseases. The aim of this study is to evaluate the antioxidant and antimicrobial activity of the banana flower and stem. Two selected *Musa spp.* banana plants were dried, powdered, and extracted using the Soxhlet method with solvents of increasing polarity, petroleum ether (PE), ethyl acetate (EA), and methanol (ME). The extracts were then subjected to antioxidant assays like DPPH, FRAP, Total Phenolic Count (TPC), and Total Flavonoid Count (TFC). The antimicrobial activity against selected microorganisms was investigated using the agar well diffusion method. The moisture content was found to be higher in banana stems compared to flowers. The banana flower extracts of increasing polarity shown a steady increase in all antioxidant assays, while the banana stem extracts were seen to vary across different antioxidant capacity assays. The highest in DPPH assay was *Musa acuminata* ‘Berangan’ flower (91.8%) ME extract, FRAP with *Musa x Paradisiaca* ‘Nangka’ stem (4393.9 mg BHT/g) PE extract, TPC (594.85 mg GAE/g) and TFC (391.01 mg QE/g) with *Musa x Paradisiaca* ‘Nangka’ stem EA extract. The extracts showed higher antimicrobial activity against *S.aureus*, followed by *E.coli* and *E.faecalis*. The EA extract of *Musa x Paradisiaca* ‘Nangka’ stem recorded the highest activity across the antioxidant, and antimicrobial assay carried out in this study. In conclusion, both the flower and the stem exhibited good antioxidant and antimicrobial capacity in solvent of increasing polarity.

**Keywords:** antioxidant; antimicrobial; *Musa acuminata*; *Musa X paradisiaca*.

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## Funding

This research received no external funding.

## Acknowledgments

This research has no acknowledgment.

## Conflicts of Interest

The authors declare no conflict of interest.