

**DETERMINATION OF ANTIOXIDANT AND
ANTIMICROBIAL ACTIVITY OF DATES
(*Phoenix dactylifera*)
MARIAMI & SAFAWI AGAINST FOODBORNE
PATHOGENS
Staphylococcus aureus AND *Escherichia coli***

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**BACHELOR OF SCIENCE (Hons.)
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ABSTRACT

DETERMINATION OF ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF DATES

(*Phoenix dactylifera*)

MARIAMI & SAFAWI AGAINST FOODBORNE PATHOGENS

Staphylococcus aureus AND *Escherichia coli*

Dates (*Phoenix dactylifera*) are renowned for their rich nutritional profile and diverse therapeutic properties. They are a significant source of essential nutrients, including vitamins, minerals, and bioactive compounds such as polyphenols and flavonoids, which contribute to their potent antioxidant and antimicrobial activities. This study aims to evaluate the antioxidant and antimicrobial activities of two varieties of dates, Mariami and Safawi, against foodborne pathogens, *Staphylococcus aureus* (*S. aureus*) and *Escherichia coli* (*E. coli*). The total phenolic content (TPC) and total flavonoid content (TFC) of the ethanolic date extracts were determined using Folin-Ciocalteu method and an aluminium chloride colorimetric method, respectively. Antioxidant activity was assessed through the DPPH radical scavenging assay. Additionally, the antibacterial activity of both date extracts was determined using the agar diffusion method. The results demonstrated that both Mariami and Safawi date extracts possess significant antioxidant properties and exhibit inhibitory effects against *Staphylococcus aureus* and *Escherichia coli*. These findings underscore the potential of dates as natural sources of antioxidants and antimicrobial agents, offering promising applications in food preservation and health promotion. Specifically, the total flavonoid content (TFC) was higher in Safawi (76.15 mg QE/g \pm 0.0065) compared to Mariami (66.22 mg QE/g \pm 0.0148), indicating a stronger presence of flavonoid compounds in Safawi dates. Similarly, the total phenolic content (TPC) was also higher in Safawi (0.542196 mg GAE/g \pm 0.0175) compared to Mariami (0.415529 mg GAE/g \pm 0.0007), suggesting a greater concentration of phenolic compounds in Safawi dates. These values highlight the superior antioxidant potential of Safawi dates, making them particularly effective for use as natural antioxidants and antimicrobial agents in various applications.

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