

## The Lebanese LSIDCM

# Antibacterial activity of *Ilex paraguariensis* (Yerba Mate) against Gram-positive and Gram-negative bacteria

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### Abstract

**Introduction:** Limited research was performed on the antibacterial activity of the aqueous extract of Yerba Mate. The purpose of this study is to evaluate the anti-bacterial activity of Yerba Mate against Gram-positive and Gram-negative bacterial strains and its action against some resistant bacteria with genotypic molecular testing of resistance profiles.

**Methodology:** Commercial *Ilex paraguariensis* stems and leaves were purchased and extracts were prepared by adding water at 70°C for 2 hrs. ATCC bacterial strains and clinical strains from Centre Hospitalier Du Nord (CHN) were used for testing. Macro dilution method was used to determine the minimal inhibitory. Minimal bactericidal concentration (MBC) was determined by sub-culturing the tubes with clear broth. For phenotypic and genotypic detection of  $\beta$ -lactamases, Double Disk Synergy method, E-test, phenylboronic acid disc method and multiplex PCR were performed for the identification of the mechanisms of resistance.

**Results:** Antibacterial activity was observed against all tested strains, with a greater activity against Gram-positive bacteria. This study showed mostly a greater antibacterial activity of aqueous extract of Yerba Mate in comparison to different extraction methods published. In general, the MIC and MBC values ranged between 0.468 mg/mL and 15 mg/mL. No correlation was found between the different molecular resistance profiles and the antibacterial activity.

**Conclusion:** More studies are needed to determine the molecule or molecules responsible for this activity. Moreover, testing a wider range of bacterial isolates is important for a better understanding of the potential role of Yerba Mate.

**Key words:** antibacterial activity; *Ilex paraguariensis*, Mate.

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