

# Pharmacology and Ethnopharmacology

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## *Terminalia catappa* L.: A medicinal plant from the Caribbean pharmacopeia with anti-*Helicobacter pylori* and antiulcer action in experimental rodent models

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*Terminalia catappa* L. (Combretaceae) is a medicinal plant listed as a pharmacopeia vegetable from Caribbean to treat gastritis. The objective of this study was to evaluate the gastroprotective and healing effect of the Aqueous Fraction (FrAq) obtained from the leaves of *Terminalia catappa* and to determine the antiulcer mechanism of action in experimental rodent models and its activity to *Helicobacter pylori*. The FrAq was challenged by different necrotizing agents in rodent models, such as absolute ethanol and ischemia-reperfusion injury. The antiulcer mechanism of action of FrAq was assessed and the healing effects of the fraction after seven and 14 days of treatment was evaluated by matrix metalloproteinase activity (MMP-2 and MMP-9). The toxicological effect of subacute treatment with FrAq during 14 days of treatment was also analyzed. The anti-*Helicobacter pylori* activity was determined by microdilution. The phytochemical study of the fraction was analyzed by experiments with FIA-ESI-IT-MSn (Direct Flow Analysis-ionization Electrospray Ion Trap Tandem Mass Spectrometry) and high performance liquid chromatography (HPLC) coupled to a Photodiode Array (PDA). The results after the oral treatment with FrAq (25 mg/kg) significantly decreased the number of ulcerative lesions induced by ethanol and ischemia/reperfusion injury. The action of FrAq was mediated by the activation of defensive mucosa-protective factors, such as increases in mucus production, the nitric oxide (NO) pathway and endogenous prostaglandins. Oral treatment with FrAq for seven and 14 days significantly reduced the lesion area (80% and 37%, respectively) compared to the negative control group. Analyses of MMP-9 and MMP-2 activity from gastric mucosa confirmed the accelerated gastric healing effect of FrAq. This extract also presented considerable activity against *Helicobacter pylori*. The mass spectrum and MS/MS of the aqueous fraction indicates the existence of many different phenolic compounds, including punicalagin, punicalin, and gallagic acid, among others. We concluded that FrAq from *Terminalia catappa* leaves has excellent preventive and curative effects on acute and chronic induced gastric ulcers and showed an important profile against *Helicobacter pylori*.

### Biography

Walber Toma has completed his PhD from University of Campinas (Unicamp) from Brazil. He is the Researcher of the Department of Ecology from Santa Cecília University (Unisantia) and also from the Department of Pharmaceutical Sciences in São Camilo University (São Camilo). In Santa Cecília University, he is the Main Researcher of a Laboratory of Natural Products that seeks ethnopharmacological informations from the South Coast populations of São Paulo state. He is also the Director of an specialization course in Clinical Pharmacology at Unisantia. He has published more than 30 papers on the following subjects: ethnopharmacology, gastroprotective activity of plant extracts, toxicology and ecotoxicology assays from natural products.

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