

# The Inhibitory Activity of Typified Propolis against *Enterococcus* Species

Bernard J. Moncla<sup>a,b</sup>, Peter W. Guevara<sup>b</sup>, James A. Wallace<sup>a</sup>, Maria C. Marcucci<sup>c</sup>, Jacques E. Nor<sup>d</sup>, and Walter A. Bretz<sup>e,\*</sup>

<sup>a</sup> School of Dental Medicine, University of Pittsburgh, Departments of Oral Biology and Endodontics, 3501 Terrace Street, Pittsburgh, PA 15260, USA

<sup>b</sup> School of Medicine, University of Pittsburgh and Magee-Women's Research Institute, 3550 Terrace Street, Pittsburgh, PA 15260, USA

<sup>c</sup> School of Pharmacy, Universidade Anhanguera-Uniban, Rua Maria Cândida, 1813, São Paulo, SP, Brazil

<sup>d</sup> University of Michigan, School of Dentistry, Department of Cariology, Endodontics and Restorative Sciences, 1011 N. University Ave, Ann Arbor, MI 48109, USA

<sup>e</sup> New York University College of Dentistry, Department of Cariology and Comprehensive Care, 345 E. 24<sup>th</sup> Street, New York, NY 10010, USA.  
Fax: +1-212-9989914. E-mail: wb36@nyu.edu

\* Author for correspondence and reprint requests

Z. Naturforsch. **67c**, 249–256 (2012); received June 17, 2011/February 29, 2012

Propolis, a natural bee product widely used for its antimicrobial activity, was tested against isolates of *Enterococcus* from humans, pig-tailed macaques, isolates of refractory endodontic treatment cases, and isolates from *Lactobacillus*-containing food supplements. Typification of the propolis was performed by high-performance liquid chromatography (HPLC) by which prenylated compounds, cinnamic acid derivatives, and flavonoids were detected as the main constituents. Minimum inhibitory concentrations (MIC) were determined using the agar dilution method. All human and animal *Enterococcus* isolates demonstrated MIC values of 1600 µg/mL. Enterococcal species of human and animal origin were inhibited by propolis. Particularly, human isolates of *E. faecium* and *E. faecalis* of refractory endodontic treatment cases were susceptible to propolis of Brazilian origin.

**Key words:** Propolis, *Enterococcus*, MIC