

5th International Conference and Exhibition on

Pharmacology and Ethnopharmacology

March 23-25, 2017 Orlando, USA

Antimicrobial, antioxidant and cytotoxic activities of propolis from Brazilian stingless bees

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Propolis is a resinous substance produced by bees through the mixture of jaw secretions and the exudate collected from plant materials. This resin is used in the construction, maintenance, and asepsis of the nest. There are records that ancient civilizations, such as the Incas, Greeks, Egyptians, and Romans, used propolis for its therapeutic properties. Propolis from stingless bees *Melipona orbigny* (manduri-de-Mato-Grosso) and *Tetragonisca fiebrigi* (Jataí or abelha-ouro) found in Brazil are used in folk medicine by their nutritional and therapeutic properties. Propolis from stingless bees are well known for its biologic properties; however, few studies have demonstrated these effects. Therefore, this study aimed to investigate the chemical composition and antimicrobial, antioxidant and cytotoxic activities of propolis from the stingless bee *Melipona orbigny* and *Tetragonisca fiebrigi* found in Mato Grosso do Sul, Brazil. The chemical composition of the Ethanol Extracts of Propolis (EEPs) these species of bees indicated the presence of aromatic acids, phenolic compounds, alcohols, terpenes and sugars. The EEPs were active against American Type Culture Collection (ATCC) and hospital strains of bacteria and fungi. The EEPs showed antioxidant activity by scavenging free radicals and inhibiting hemolysis and lipid peroxidation in human erythrocytes incubated with an oxidizing agent. Additionally, EEPs promoted cytotoxic activity and primarily necrotic death in K562 erythroleukemia cells. Taken together, these results indicate that propolis from *Melipona orbigny* and *Tetragonisca fiebrigi* have therapeutic potential for the treatment and/or prevention of diseases related to microorganism activity, oxidative stress and tumor cell proliferation.

Biography

Edson Lucas dos Santos has completed his PhD in 2004 from Federal University of São Paulo and Postdoctoral studies from Federal University of São Paulo, São Paulo, Brazil and Max-Delbrueck Center for Molecular Medicine, Berlin, Germany. He is an Associate Professor at School of Environmental and Biological Science, Federal University of Grande Dourados, Dourados, MS, Brazil and Leader of the research group on Biotechnology and Bioprospecting applied to metabolism. He has published more than 40 papers in reputed journals studying metabolic syndrome, cytotoxicity, antitumor action and prospection of bioactive molecules of natural and synthetic origin.

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