10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil

Section: 03

CYTOTOXIC ACTIVITY OF BROWN PROPOLIS ON HUMAN TUMOR CELLS

Karin Carla dos Santos Schmidt[1*], *Fernanda Caroline Knob*[1], *Suelen dos Santos*[2], *Elisângela Düsman*[3], *Tatiane Luiza Cadorin Oldoni*[1]

karinsschmidt@gmail.com

1-Programa de Pós-Graduação em Tecnologia de Processos Químicos e Bioquímicos (PPGTP-PB), Universidade Tecnológica Federal do Paraná (UTFPR) - Campus Pato Branco, Via do Conhecimento, s/n - Km 1, Fraron, Pato Branco, PR, 85503-390, Brazil. 2-Programa de Pós-Graduação em Química Aplicada (PPGQA), Universidade Estadual do Centro Oeste (UNICENTRO) - Campus CEDETEG, Alameda Élio Antonio Dalla Vecchia, 838, Vila Carli, Guarapuava, PR, 85040-167, Brazil. 3-Departamento de Química e Biologia, Universidade Tecnológica Federal do Paraná (UTFPR) – Campus Francisco Beltrão, Rua Gelindo João Folador, 2000, Novo Horizonte, Francisco Beltrão, PR, 85602-863, Brazil.

Propolis is a complex mixture produced by bees from plant exudates, wax, and salivary secretions, containing phenolic compounds, terpenes, and other secondary metabolites with recognized biological relevance. Its chemical composition varies according to botanical and geographical origin, directly influencing its activity profile. Sequential extraction processes using solvents with different polarities produce subfractions with distinct chemical constituents, enabling targeted evaluation of their biological effects. This study investigated the cytotoxic effect of four purified fractions of brown propolis collected in the southwest region of Paraná, Brazil. Fractions were obtained sequentially with hexane, dichloromethane, ethyl acetate, and acetone. Samples were evaluated *in vitro* on human hepatoblastoma cells (HepG2) using the MTT assay at concentrations of 5, 10, 50, 100, 200, 300, 400, 500, and 1000 µg/mL, with incubation times of 24, 48, and 72 h. The hexane fraction reduced cell viability at 300 and 400 µg/mL (48 and 72 h), 500 µg/mL (24, 48, and 72 h), and 1000 µg/mL (24 h). The dichloromethane fraction reduced viability starting at 5 µg/mL (48 h) and at all concentrations ≥400 µg/mL at all time points. The ethyl acetate fraction reduced viability from 50 µg/mL (72 h), with additional reductions at 500 µg/mL (24 and 72 h) and 1000 µg/mL (72 h). The acetone fraction reduced viability from 5 µg/mL (72 h) and at concentrations ≥50 µg/mL (48 and 72 h). The data indicates that the extraction solvent's polarity influences the brown propolis subfractions' cytotoxicity profile. Among the conditions evaluated, the acetone fraction showed the broadest range of concentrations associated with reduced cell viability. These results highlight the need for further chemical characterization and mechanistic studies to identify the compounds involved and assess their biological relevance.

Keywords: *bioassay, cytotoxic activity, cell viability, brown propolis*