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ANTITUMOR POTENCIAL OF PROPOLIS EXTRACT FROM *DUCKEOLA GHILIANII* AND *FRIESEOMELITTA LONGIPES*: AMAZONIAN STINGLESS BEES

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Propolis from *Apis mellifera* has been widely studied for its cytotoxic, antitumor, pro-apoptotic, and potential anti-mutagenic activities, but the biological potential of propolis from *Duckeola ghilianii* and *Frieseomelitta longipes* remains scarcely explored. Thus, this study aimed to evaluate the antitumor activity of propolis extracts from *Duckeola ghilianii* (DGPE) and *Frieseomelitta longipes* (FLPE). In vitro assays were performed to evaluate the effects of these propolis extracts on A549 cell viability, colony formation and migration profile. Cells were treated with DGPE, FLPE and paclitaxel (PTX) at their maximum non-cytotoxic concentrations, both alone and in combination, for 48 hours and their cell viability was determined using the resazurin assay. Clonogenic assays were performed by plating 100 cells per well in a 12-well plate. Cells were treated with a sub-cytotoxity dose of DGPE or FLPE (7,5 and 15µg/mL) and PTX (0.05mM), which was used as positive control. After 10 days of culture, cells were stained with 1% crystal violet solution. Cells migration was assessed by wound healing assay and a transwell chamber (8 µm), with epidermal growth factor EGF (30ng/mL) as a positive control. Our results showed a reduction in viability in the group treated with DGPE and PTX, demonstrating a synergism of PTX with DGPE but not with FLPE. Cells treated with DGPE significantly reduced colony formation compared to the control. In contrast, FLPE showed a significant increase in the number of colonies, suggesting a possible activation of epithelial-mesenchymal transition (EMT). In the wound healing experiment, both propolis extracts showed a reduction in cell migration compared to the control. However, in the transwell chamber assay, DGPE-treated cells showed a migration rate similar to the control, while FLPE revealed an increase in migrated cells, reinforcing the hypothesis of EMT induction at low and non-cytotoxic concentrations. The findings indicate that even at a sub-cytotoxic dosage, DGPE has promising antitumor potential, while FLPE can modulate mechanisms related to EMT. Thus, there is a clear need for further studies on the antineoplastic effects of this natural product, especially considering its modulation of the tumor microenvironment, projecting as a promising natural product of oncological interest.

Keywords: *propolis; stingless bees; Duckeola ghilianii; Frieseomelitta longipes; cancer.*

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