

Nanoparticle Loading of Antitumor Compounds Extracted from Red Propolis

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Introdução

Red propolis is a natural product produced from the mutualistic interaction between bees, mainly *Apis mellifera*, and the plant *Dalbergia ecastophyllum*, which belongs to the Fabaceae family. In addition, the *Apis mellifera* bee is responsible for removing compounds from the plants that will become a resin that will be used to waterproof and seal cracks in the hive, which is already known to have antitumor activity. It is known that large-scale extraction of these compounds found in red propolis is expensive, hence the hypothesis of carrying through nanoparticles, increasing delivery efficiency and preventing compounds from binding at sites other than the target receptors.

Casuística e Métodos

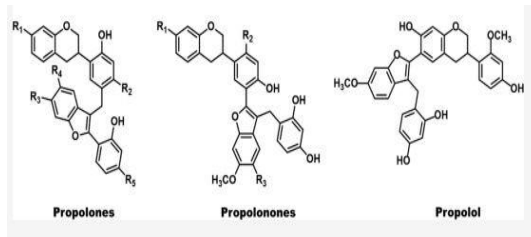
This is a narrative, descriptive, qualitative review, which brought together articles dated between the years 2016 and 2021, searched in the following databases: Google Scholar, Scielo, Lilacs and PubMed. For the search, the following descriptors were used: cancer, *Dalbergia ecastophyllum*, antitumor. Studies published in English and Portuguese were included, which addressed the extract of red propolis with antitumor activity. Therefore, those written in other languages, outside the time frame or the theme in question, were excluded.

Resultados

In all, 15 studies met the sample selection criteria. Recent published evidence from red propolis compounds such as EtOH extract, Propolone A and B, Propolol, Biochanins, Medicarpine, Liquiritigenin and Formononetin, demonstrated growth-inhibiting activity of some cancer cells. In addition, it can be inferred, according to other works, that the compounds Propolone A and B have antitumor potential compared to the drug Doxorubicin, since the antineoplastic is resistant to some cancers, with red propolis compounds as a therapeutic alternative. The literature shows that there was an inhibitory effect of 51% at the concentration of 100 µg/mL against bladder carcinoma, when compared to the control group. Therefore, it was observed that propolis interferes in a set of intracellular events, so it becomes promising in the antiproliferation of neoplasms.

Therefore, it is evident that Brazilian red propolis acts in different intracellular situations of carcinogenic cells, whose principle is to decrease tumor proliferation and cellular apoptosis.

Resultados



Fonte: Thais Banzato, 2020.

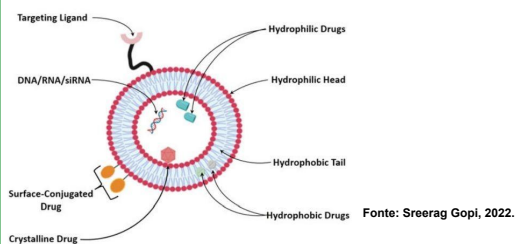
Figura 01: Compostos extraído da própolis vermelha com atividade antitumoral

	U-251	MCF7	NCI-ADR/RES	PC-3
			TGI	
Propolone B (2)	17.2 ± 1.6	27 ± 4.1	19.1 ± 2.4	19.1 ± 0.7
Propolone A (5)	25 ± 0.8	34.6 ± 6.2	29.9 ± 3.4	21.9 ± 0.4
Doxorubicin	6.9 ± 5.3	12.2 ± 9.9	16.1 ± 10.6	4.0 ± 1.7
			LC ₅₀	
Propolone B (2)	≥10.0	≥10.0	≥10.0	≥10.0
Propolone A (5)	n/a	n/a	n/a	>10.0

Fonte: Gubiani, 2020

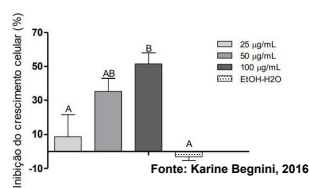
Figura 02: Valores de Inibição Total do Crescimento (TGI) e LC₅₀ (µM) para Propolona B (2), Propolona A (5) e doxorubicina.

Estrutura básica de um sistema de entregas de drogas de lipossomas.



Fonte: Sreerag Gopi, 2022.

Figura 03: Extrato etanólico de própolis vermelha inibe o crescimento celular de carcinoma de bexiga, após 24 horas de tratamento;



Fonte: Karine Beghini, 2016

Conclusões

Contato

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