

**Área: ORG***(Inserir a sigla da seção científica para qual o resumo será submetido. Ex: ORG, BEA, CAT)***In Vitro Bioaccessibility Of Phenolic Compounds And Flavonoids In Ethanolic Extracts of Propolis from *Apis mellifera*****Ana Beatriz Hortmann (PG),<sup>1\*</sup> Renata Laismann Brum (IC),<sup>1</sup> Maidelen Del Carmen Lozano Guerrero (PG),<sup>1</sup> Yohandra Reyes Torres (PQ).<sup>1</sup>****[biahortmann112@gmail.com](mailto:biahortmann112@gmail.com)**<sup>1</sup>Department of Chemistry, State University of Midwest (UNICENTRO), Guarapuava, Paraná, Brazil.

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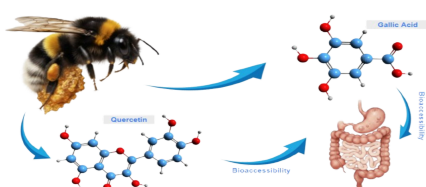
**Highlights**

Figure 1: Propolis and its composition.

- Propolis exhibits multiple biological activities which depend on the gastrointestinal release and bioaccessibility of its bioactive compounds.
- Simulated gastrointestinal digestion (SGI) was applied to *Apis mellifera* propolis extracts and resulted in low bioaccessible fractions, highlighting the need to improve compound release and stability for better absorption.

**Resumo/Abstract**

The biological activities of propolis, including antifungal, antioxidant, anti-inflammatory, antibacterial, and antitumoral effects, are well documented in scientific literature.<sup>1,2</sup> However, these properties depend on the ability of its bioactive compounds to reach their biological targets. A key step in this process is their release from the propolis matrix during gastrointestinal digestion.<sup>3</sup> Therefore, the aim of this study was to evaluate the variations in phenolic and flavonoid content of *Apis mellifera* propolis during *in vitro* simulated gastrointestinal digestion (SGI) and to determine their bioaccessible fraction. The variation was monitored through the spectrophotometric assays of Folin-Ciocalteu<sup>4</sup> and aluminum chloride complexation<sup>5</sup>, respectively. The SGI was performed according to the Minekus methodology<sup>6</sup> following oral, gastro and intestinal phases to calculate bioaccessible fractions expressed as Galic acid (GAE) and quercetin (QE) equivalents. Bioaccessible fractions varied from 4,28 to 38,6 %, indicating the need to improve the stability of bioactive compounds of propolis during SGI to enhance their absorption.

**Table 1 – Bioaccessible fractions GAE and QE in propolis samples at all GI stages**

Flavonoids	%QE Oral	%QE Gastric	%QE Intestinal	Phenolics	%GAE Oral	%GAE Gastric	% GAE Intestinal
3	16,9 <sup>B</sup> ± 1,41	37,5 <sup>A</sup> ± 3,63	38,6 <sup>A</sup> ± 2,05	3	4,96 <sup>C</sup> ± 1,07	7,5 <sup>B</sup> ± 0,97	15,18 <sup>A</sup> ± 1,41
11	25,6 <sup>A</sup> ± 1,7	19,96 <sup>B</sup> ± 0,39	24,52 <sup>A</sup> ± 0,31	11	5,46 <sup>C</sup> ± 1,22	7,21 <sup>B</sup> ± 1,75	11,74 <sup>A</sup> ± 1,18
21	22,58 <sup>A</sup> ± 4,35	13,89 <sup>B</sup> ± 1,92	20,78 <sup>A</sup> ± 0,94	21	13,86 <sup>C</sup> ± 1,5	17,85 <sup>B</sup> ± 0,85	25,48 <sup>A</sup> ± 0,75
23	20,33 <sup>B</sup> ± 0,9	31,37 <sup>A</sup> ± 1,74	21,18 <sup>B</sup> ± 0,77	23	25,15 <sup>B</sup> ± 1,07	28,99 <sup>B</sup> ± 0,97	38,03 <sup>A</sup> ± 0,75
33	25,93 <sup>A</sup> ± 4,24	18,73 <sup>B</sup> ± 2,42	29,32 <sup>A</sup> ± 0,54	33	6,25 <sup>B</sup> ± 0,76	4,28 <sup>C</sup> ± 1,27	11,79 <sup>A</sup> ± 1,23

Identical superscript letters for %QE and % GAE on the same line indicate that there was no significant difference between the bioaccessible fractions of the same extract in the different phases for flavonoids and phenolics.

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