

Chemical Composition and Bioactivity of *Geniotrigona thoracica* Propolis and Their Impact on Biodiversity



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Introduction

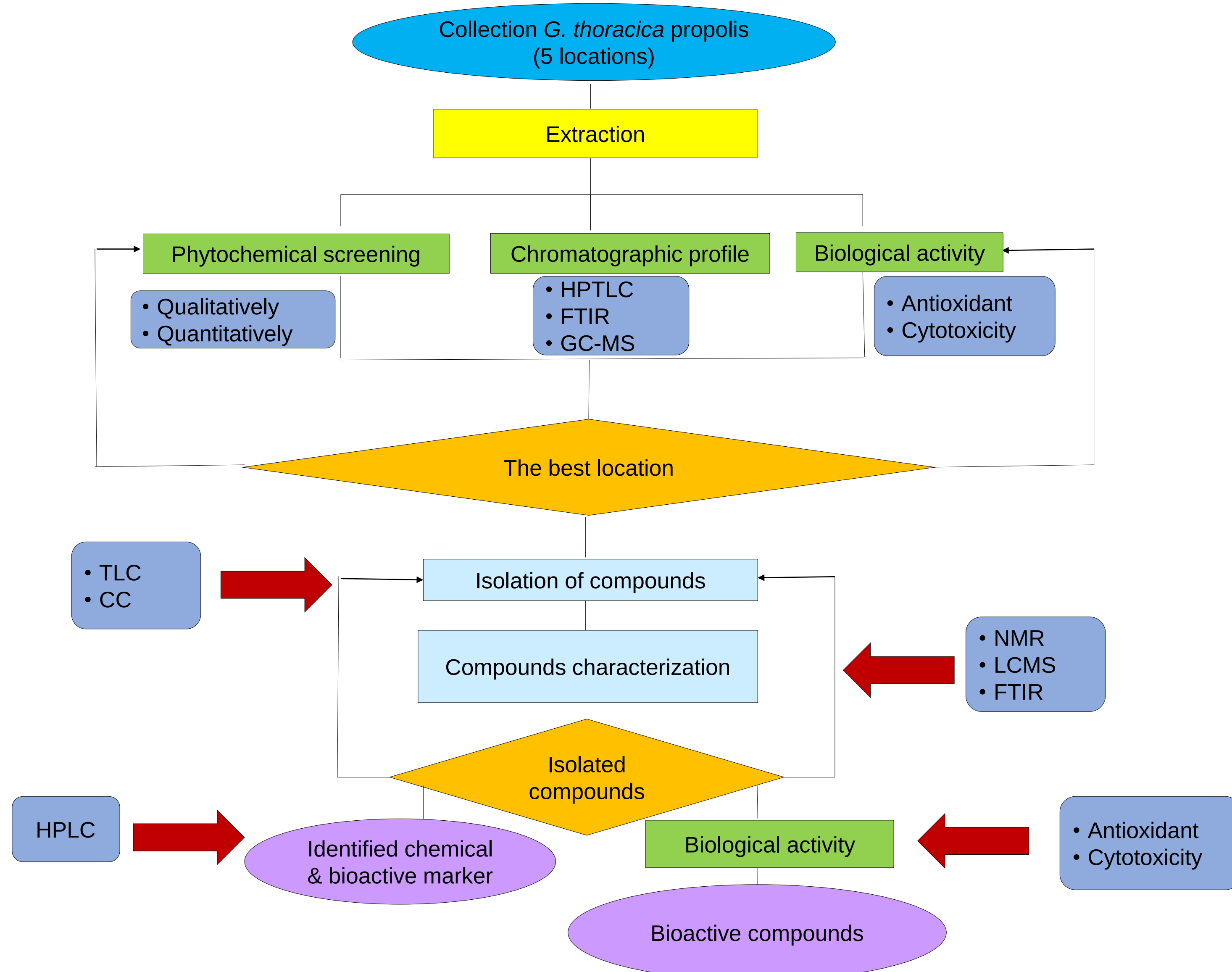
Propolis possesses diverse chemical components – vary according to geographical origins and plant sources

Quality control – to ensure consistent and effective therapeutic benefits

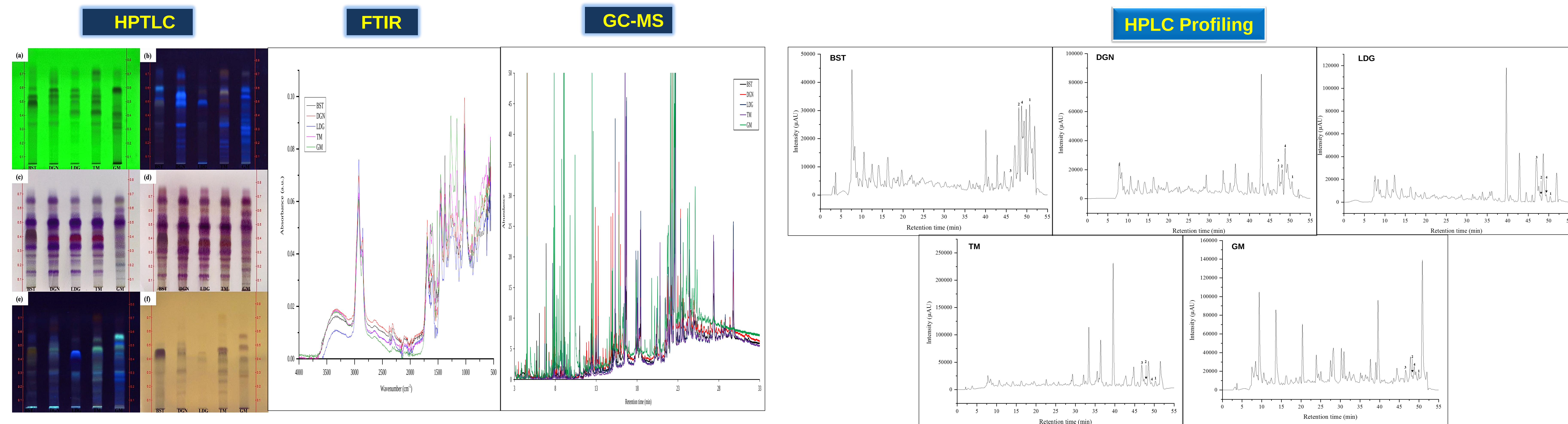
Unfortunately, there are no markers available for quality control – making it difficult for commercialization

As a result, there is a need to establish the uniform quality control to guarantee the safety, efficacy, and stability of propolis products

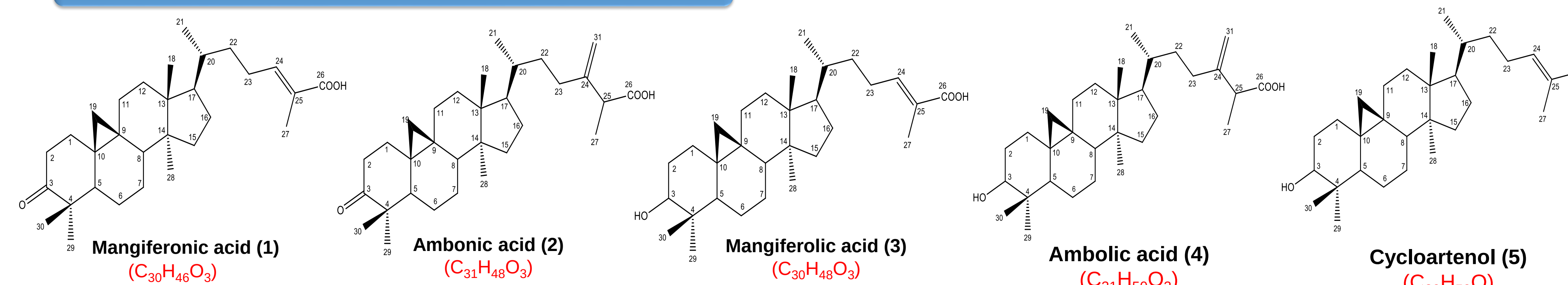
Methodology



Results & Discussion



CYCLOARTANE-TYPE TRITERPENES



Cytotoxic activity of compounds

Compound	IC ₅₀ values (μg/mL)	
	MCF-7	HepG2
Mangiferonic acid (1) and Ambonic acid (2)	11.35 ± 0.42 ^b	15.07 ± 1.74 ^b
Mangiferonic acid (3)	5.08 ± 0.71 ^c	4.82 ± 0.89 ^c
Ambolic acid (4)	27.21 ± 3.60 ^a	22.08 ± 1.78 ^a
Cycloartenol (5)	27.77 ± 1.89 ^a	27.16 ± 6.63 ^a
Doxorubicin	0.80 ± 0.00 ^c	1.07 ± 0.18 ^c

- Mangiferonic acid (3) exhibited the most potent and strong cytotoxicity against MCF-7 and HepG2 cancer cell.
- Ambolic acid (4) and cycloartenol (5) showed weak cytotoxic properties for both cancer cells, respectively.
- Previous study by Thanh et al., (2021) reported cytotoxic properties of mangiferonic acid, mangiferonic acid and cycloartenol isolated from *Lisotrigona furva* propolis in LU-1 and MCF-7 cancer cells.

SDG 15 (Life on Land)

Pivotal ecological role played by stingless bee *G. thoracica* and its propolis contribute to biodiversity conservation

The discovery of bioactive markers in *G. thoracica* propolis opens doors for quality control and standardization

The unique chemistry and bioactivity of this propolis emphasize the urgency to protect stingless bees and their habitat recognizing them as a vital components of terrestrial ecosystems

Conclusion

In conclusion, our study brings attention to the intricate interplay between biodiversity conservation and sustainable land use, emphasizing the importance of preserving terrestrial ecosystems for the benefit of current and future generations directly aligning with the goals of SDG 15.