

A detailed illustration of a honey jar and dipper. A glass jar filled with golden honey sits on a white circular base. A wooden honey dipper with a spiral-shaped head is positioned above the jar, with a stream of honey dripping from its center into the jar. A realistic-looking bee is shown in flight at the top left, its path leading towards the jar. The background is a deep red color, with a large yellow triangular shape in the upper right corner. The text is written in a cursive font within this yellow area.

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### 31. IS PORTUGAL A COUNTRY OF PROPOLIS DIVERSITY?

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PORTUGAL

Portugal geographical situation and therefore their floral diversity points towards the existence of typical propolis from temperate zones, where bud exudates of poplar trees (*Populus* species) are the main source of this honeybee product. With the exception of Madeira and Azores Islands, where the floral diversity could present significant differences, it would be expected to find a product rich in flavonoid aglycones (flavones and flavanones), phenolic acids and their esters, characteristic of *European* propolis. In order to clarify this issue, several propolis samples were collected along the country, including islands, and their colour, ashes, content of wax, phenols and flavonoids, as also their phenolic profile, were determined. Albeit this work seems endless, it is clear that as dipper we study each sample, more diversity we find. In fact, the first phenolic profile we analyse by mass spectroscopy,<sup>[1]</sup> a propolis sample with a significant poplar source, revealed the presence of 37 phenolic compounds, from which, seven were identified for the first time in propolis. More, the straight comparison of the phenolic profile obtained by HPLC for all samples, allow the identification of five distinct propolis phenolic extracts, with a correspondence diversity found as well in colour and odour. Although some samples show a typical odour of *Cistus* species, a common resinous plant in the east side of Portugal, the exact botanical origin seems another giant task to overcome.

The bioactive properties of the phenolic extracts were also studied in terms of reducing power and radical scavenging effect. Once again, the differences between propolis samples were clearly observed.

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