

Nutritional and palynological screening of bee pollen from different regions of Portugal

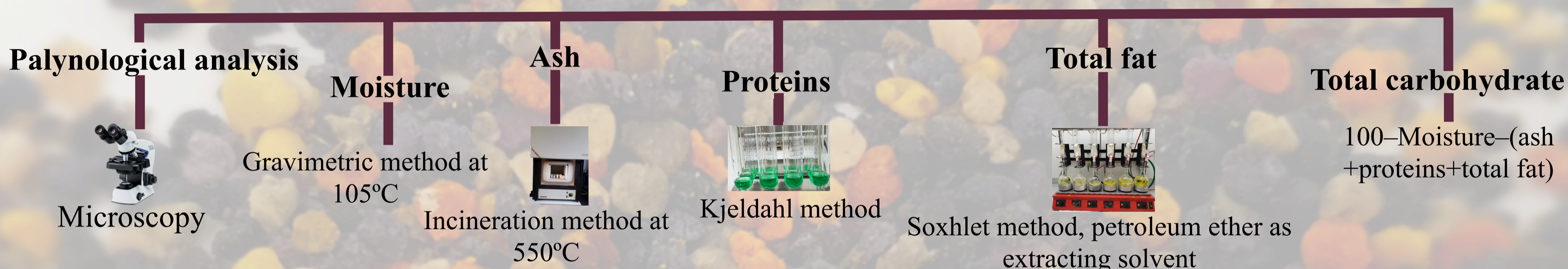
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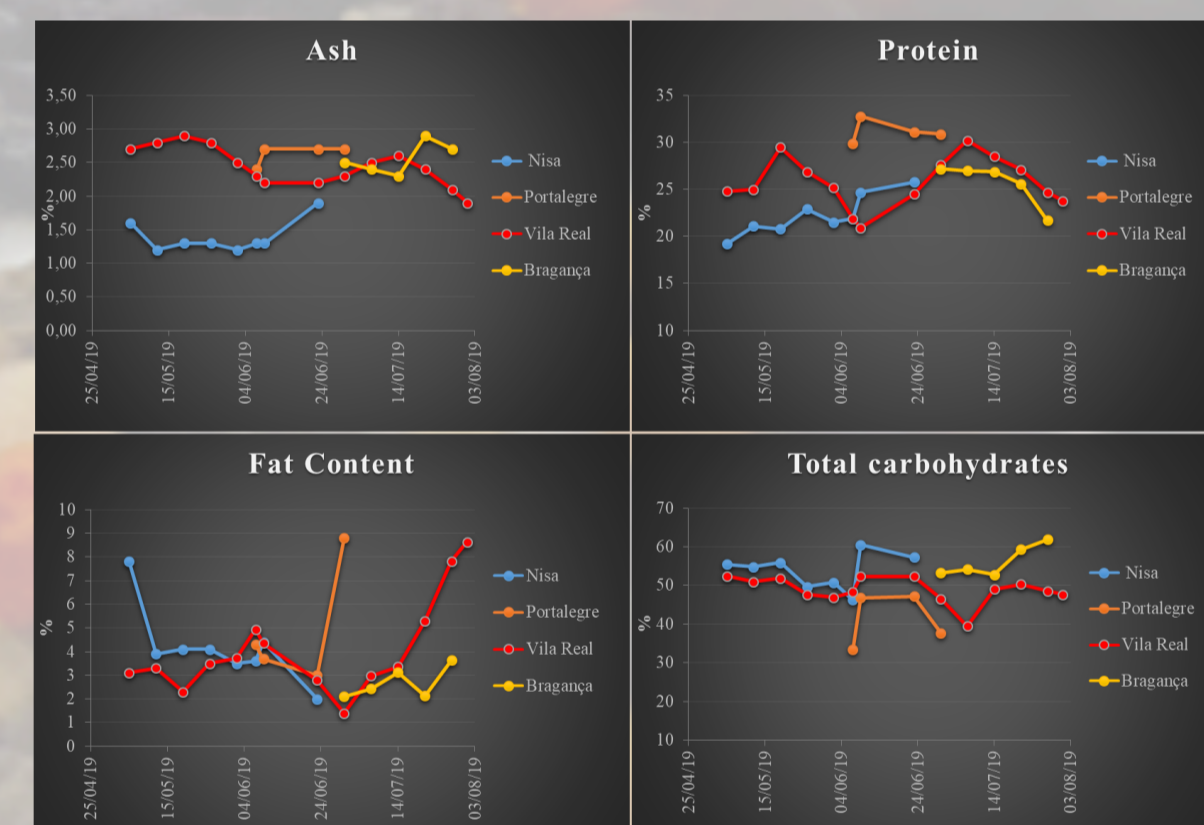
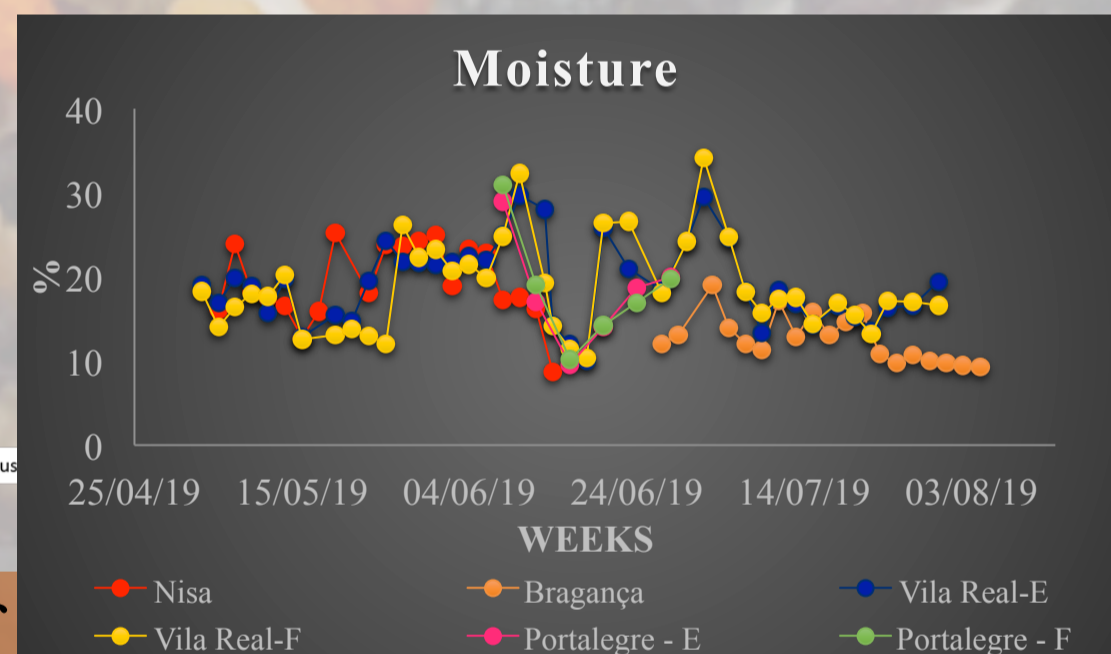
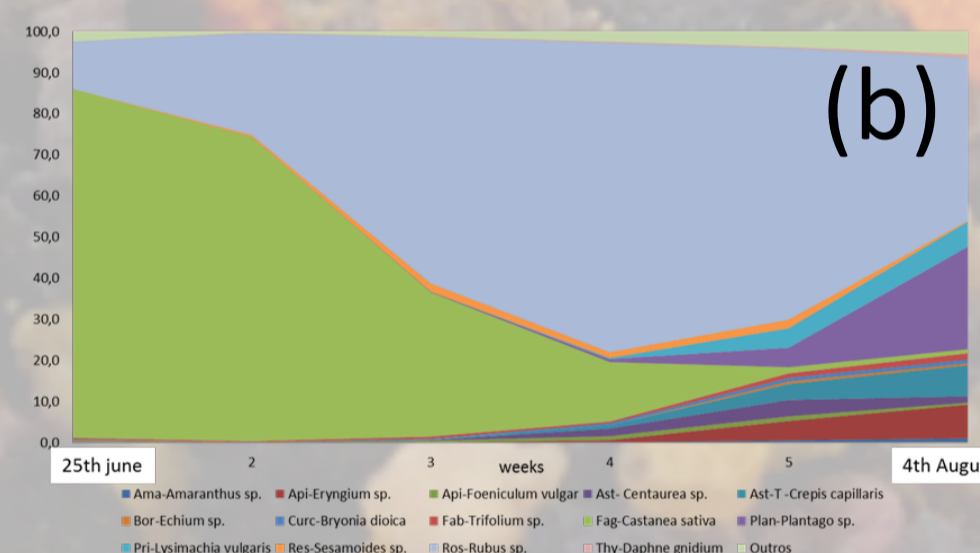
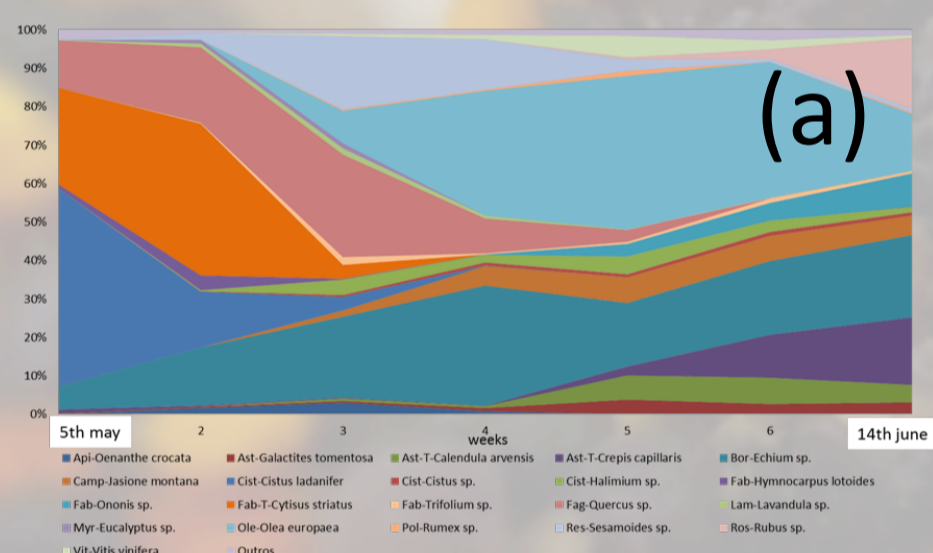
Introduction

Pollen is a product with an increasing market potential, particularly in the nutraceutical and food supplements segment. Besides of its image linked to natural products, it is a source of proteins, rich in minerals, antioxidant compounds and essential amino acids. This compositional richness is also the reason why honeybees rely in its collection to feed the colony. In this communication, the nutritional value and palynological profile of 31 pollen samples, collected from four regions of Portugal, during spring and summer of 2018, are presented.

Methods



Results



(a) Illustrates the profile of the pollen loads weekly collected during the period from May 5 to June 14 in Nisa (center interior - Portugal). The pollen profile shows a great botanical diversity, especially in chronological order for the cystaceae, mainly *Cistus ladanifer*, the genus *Cytisus*, the genus *Quercus*, the genus *Echium*, the oleaceae of the genus *Olea* and the resedaids of the genera *Reseda* and *Sesamoides*.

(b) Illustrates the profile of pollen loads weekly collected from June 4 to July 25 in Bragança (North interior - Portugal). The pollen profile shows a low botanical diversity, reflecting the summer collection period. Thus, the overwhelming majority of pollen collected belongs to two families, the *Castanea* phagaceae and the *Rubus* rosaceae. In the last week we notice the addition of a third family of *Plantaginaceae* of the genus *Plantago*.

In the graph we can see the values of pollen humidity obtained for the four apiaries, with either bottom (E) or front (F) pollen traps. The value vary significantly (8 to 34%) depending on the weather conditions. The highest value was recorded after the occurrence of precipitation, with lower moisture content obtained for Bragança. By comparing the moisture content between pollen traps, there is no significant difference between the two models, however the production was higher using frontal traps.

The values observed in the previous graphs are in agreement with the parameters described in the literature, oscillating according to the week and place of collection, which reflects the floral origin of the pollen. It is particularly interesting the variation observed in the protein content and the relative low values of pollen from Nisa. Additionally, some sample seems to be relative rich in fat, which may be linked to waxes from plants.



Conclusion

Besides the variation in humidity of the samples, which ranged from 8 to 34%, the major nutritional parameters of the samples were in agreement with the values reported in the literature. Nevertheless, it seems clear that the differences registered in the evaluated nutritional parameters reflect the floral differences between samples.

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