First occurrence of Icacinaceae fossil flower in amber of Le Quesnoy site (Ypresian, France).
Cédric Del Rio, Thomas Haevermans, Dario De Franceschi

To cite this version:
Cédric Del Rio, Thomas Haevermans, Dario De Franceschi. First occurrence of Icacinaceae fossil flower in amber of Le Quesnoy site (Ypresian, France).. XIXth International Botanical Congress, Jul 2017, Shenzhen, China. hal-03736582

HAL Id: hal-03736582
https://hal.science/hal-03736582
Submitted on 27 Jul 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
First occurrence of Icacinaceae fossil flower in amber of Le Quesnoy site (Ypresian, France)

Cedric Del Rio¹, ², *, Thomas Haevermans², Dario De Franceschi¹

1 UMR7207, CR2P, MNHN-CNRS-UPMC, Sorbonne-Universities, CP38, 8 rue Buffon, 75231 Paris Cedex 05, France
2 UMR7205, ISYEB, CNRS-MNHN-UPMC-EPHE, Sorbonne-Universities, CP39, 57 rue Cuvier, 75231 Paris Cedex 05, France

*Corresponding author: cedric.del-rio@edu.mnhn.fr

I. Introduction

Flowers preserved in amber are rare. In particular, the lamidi clade is represented by only one occurrence (Gentianales) in the Paleogene. Nevertheless, the exceptional preservation of these fragile structures and organs which are usually not preserved in other sediments or deposits, makes these fossils important for understanding evolutionary processes and past diversity. The locality at Le Quesnoy (Houdancourt, Oise, France) was first exploited in 1999 (Net et al. 1999). This first survey highlighted the abundance of insects and the presence of at least one flower of caesalpinoidi legumes in amber. Here, we studied a flower from this site and discussed its systematic affinities.

II. Material & methods

Material: The remains of fossil resin were collected from 1997 to 2000 from the lignitic clay sediments at Le Quesnoy (Houdancourt, Oise, France) which belong to the « argiles à lignites du Soissonais » Formation. These sediments are dated from the Ypresian (± 56 Ma) according to mammal biochronology (MP7) and palynological studies. The pollen included in the amber on the petals hairs was studied using a technique of extraction (De Franceschi et al. 2000). The fossils are kept in the collections of the Muséum national d’Histoire naturelle (MNHN, Paris).

Phylogenetic analysis: A morphological matrix containing 51 taxa and 22 characters was made and added to a previous molecular matrix with 73 protein-coding genes (Stull et al. 2015). Bayesian analyses were performed using MrBayes from a mixed format with two partitions (5 million generations, sampling every 1000 generations, 20% burn-in).

III. Results & discussion

Flower description: Actinomorphic, hypogynous and pentamerosous, ø 2.5 mm, cupulate calyx. Petals fused at the base in a short cup (Fig. 1), tomentose on adaxial surface with long, simple flattened hairs with granular ornamentation (Fig. 2A-B), glabrous on abaxial surface. Stamens alternate to petals and free. Pollen small, triporate and echinate (Fig. 1D-F). The ovary seems to be poorly developed or very small.

IV. Conclusions

Notsiaum and Hosiea are Asian climbing shrubs genera. Thus we hypothesize that this flower fossil belongs to a climbing shrubs. This type of ecology is frequent for megathermal flora that could have occurred in Europe during the early Eocene global warming phase as seen in other locality (Collinson et al. 2012, Reid & Chandler 1933). Therefore, this flower could testify to an Asian affinity for Le Quesnoy Ypresian flora.

The fossil was collected during field work of the “amber team” of MNHN, with the help of Lafage-Granulat, and we thank the Langolis-Meurinne family for giving authorization to work on their property. We thank the staff of the Paris Herbarium (MNHN P) for the loan of modern flower samples and access to herbarium sheets. This work is partly funded by Labex BCDiv (MNHN) Phd financial support and by the CR2P.

---

(*) represent strong node (>95% PP).

Figure 1. Flower from Le Quesnoy site. A: Flower in apical view with petals curved backwards; B: same in basal view; C: detail of petals in basal view; D: pollen grain showing echinate ornamentation (arrows); E-F: other pollen grain showing pores (arrows). Scales: A-C = 1mm, D-F > 20 µm.

Figure 2. Petal hairs. A: On petals from fossil flower; B-D: on petals from a modern flower of Icacinum manni Oliv. Scales: A= 500 µm, C= 100 µm B&D=20 µm.

Figure 3. The 50% majority-rule consensus tree constructed by Bayesian inference in MrBayes. Mesquite orientation of partitioned characters is shown. 

V. Acknowledgements

This work is partly funded by Labex BCDiv (MNHN) Phd financial support and by the CR2P.