

VOLATILES EMITTED BY WHOLE FLOWERS AND ISOLATED FLOWER ORGANS OF THE CAROB TREE

Luísa Custódio,¹ Hugo Serra,² José Manuel F. Nogueira,^{2,3} Sandra Gonçalves,¹ e Anabela Romano¹

¹*Faculdade de Engenharia de Recursos Naturais, Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal*

²*Departamento de Química e Bioquímica e* ³*Centro de Ciências Moleculares e Materiais, Faculdade de Ciências da Universidade de Lisboa, Campo Grande, Ed. C8, 1749-016 Lisboa, Portugal*

ABSTRACT

In this work we analysed the volatiles emitted *in vivo* by fresh whole flowers and isolated flower organs of male, female and hermaphrodite carob trees (*Ceratonia siliqua* L.; *Leguminosae*) by headspace solid-phase microextraction followed by capillary gas chromatography and mass spectrometry (HS-SPME-GC/MS). More than twenty-five compounds were identified in the headspace of carob flowers, which is mainly constituted by high amounts of monoterpenes and sesquiterpenes. The gender and cultivar affected both the qualitative profile and the relative abundances of the volatiles of whole flowers and isolated floral organs. Linalool and its derivatives (*trans*-linalool furan oxide, *cis*-linalool furan oxide, 2,2,6-trimethyl-3-keto-6-vinyltetrahydropyran, *cis*-linalool pyran oxide and *trans*-linalool furan oxide) and α -pinene were the dominant volatiles in the headspace of whole flowers and floral organs. The female flowers had a higher diversity of volatile compounds than males or hermaphrodites, but a lower abundance of the major ones. Similarly, the floral scent of female flowers of cultivar Mulata had a higher content of volatiles but a lower abundance of the major compounds compared to cultivar Galhosa. The nectary disks seemed to be the major source of volatiles in all the types of flowers.