Correction to: Drought stress affects plant metabolites and herbivore preference but not host location by its parasitoids

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In this paper we addressed the effects of herbivory and drought and their interaction on plant chemistry (phytohormones, volatile organic compounds) and insect behaviour (behaviour of a herbivorous insect and its parasitoid). In the analysis of the volatile organic compounds, we found 55 compounds and we analysed the data by multivariate analysis through OPLS-DA. In a subsequent statistical analysis we employed a *t* test on the OPLS-DA scores to investigate differences between treatments. Unfortunately, this test is not appropriate for analyzing data after an OPLS-DA, because the OPLS-DA is a supervised method. This refers to three analyses in the manuscript, related to Figs. 2A, 3A and 3C in the paper. We have now re-analysed these data with an appropriate method.

Method: Multivariate analysis of plant volatiles

Differences in plant volatile organic compound (VOCs) profiles among treatments (C, D, H and HD) were re-analysed using linear multivariate analysis (principal component

analysis [PCA] and redundancy analysis [RDA]). RDA was also used to test the effects of drought-stress on VOC profile composition (C vs D, H vs HD). To test for significant differences in the multivariate analyses a Monte Carlo permutation test with 999 permutations was used. All multivariate analyses were conducted in Canoco 5.03 (Microcomputer Power, Ithaca, NY, USA).

Results

Principle component analysis of the VOC compositions shows that most of the variation in VOC profiles could be explained by four principle components (78.6% cumulative explained variation, Fig. 1). VOC profiles differed significantly among treatments (RDA, $F = 13.9$, $P = 0.001$). VOC composition was largely affected by herbivore infestation (RDA, $F = 39.1$, $P = 0.001$), whereas drought-stress did not significantly contribute to the separation of VOC profiles (C vs D: RDA, $F = 1.2$, $P = 0.225$; H vs HD: RDA, $F = 1.2$, $P = 0.271$).

Discussion

Based on this new statistical analysis, we conclude that the treatments in Fig. 2a in the original paper (control and drought versus herbivory and herbivory plus drought) are indeed significantly different as concluded in the original paper. The treatments in Fig. 3a (drought versus control; D vs C) and Fig. 3c (herbivory versus herbivory plus drought; H vs HD) are not statistically significant, as also acknowledged in the legend of Fig. 3 in the original paper. This means that the overall blends of plants subjected to the treatments in Fig. 3a and in Fig. 3c are not statically different. Yet, some significant differences are present in the emission rate of individual components of the blends. For instance, 2-methyl-2-pentanone and an unknown compound

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Fig. 1 Ordination diagram of principal component analysis (PCA) of plant volatile profiles based on the quantitative values of the volatile content of control (C, $n=21$), drought-stressed (D, $n=20$), herbivore infested (H, $n=21$) and combined herbivore and drought (HD, $n=21$). Percentage of total explained variation by PCA axes are given in parentheses

(compound 48) differ significantly between control and drought exposed plants and α -terpineol and dimethyl disulphide differ significantly between herbivore- and herbivore-plus-drought exposed plants (Table 2). Exposing plants to drought stress did affect the behaviour of the moth *Mamestra brassicae* (Fig. 4). Potentially, the few differences in emission rates of individual compounds play a role in this.

In conclusion, the t test that has been used originally was not an appropriate test to analyse the data presented in Figs. 2a, 3a and 3c. The text in the Methods and Results sections of the original paper, related to this test should be ignored. By employing an appropriate test, PCA in combination with RDA, we have confirmed the conclusion that the composition of the VOC blends is mainly affected by herbivory as well as the conclusion drawn in the legend of Fig. 3 that the treatments in Fig. 3a and Fig. 3c are not statistically significant. All other conclusions in the manuscript, i.e. on the biology (behaviour of herbivore and parasitoid, phytohormone titres, differences between emission rates of individual VOCs) remain the same. Thus, the main conclusions of the study as also presented in the title and abstract remain the same as presented in the original paper.

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