

Does [CO₂] changes affect aphid escape?

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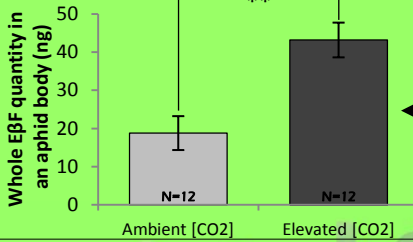
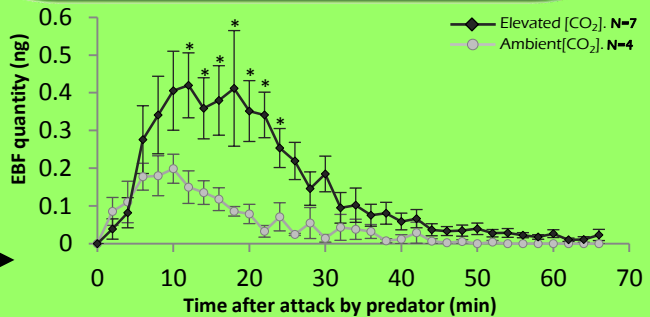
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Aphids emit an alarm pheromone (EβF) via cornicle droplets when attacked by a predator, in order to repel individuals from the colony. Does an elevation in atmospheric CO₂ concentration will impact the release mechanisms of this pheromone?

This graph represents the real-time release of EβF by an aphid *Acyrtosiphon pisum* reared under ambient or elevated CO₂ concentration, when predated by ladybird *Harmonia axyridis* (Mean ± S.E.).

Analyses were made with a zNose™, a fast GC analyzer.



What about the EβF production?

Moreover, aphids reared under elevated CO₂ concentration contain more EβF than those reared under an ambient CO₂ concentration (Mean ± S.E.).

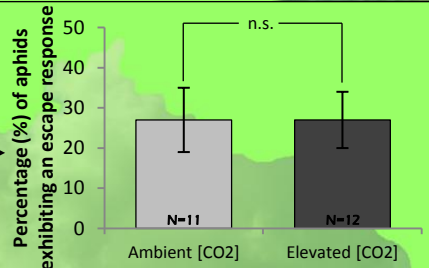
Aphids were gently removed from the plant, and then placed in n-hexane during 24h. The n-hexane was then analyzed by GC-FID.



And concerning their escape behavior?

When presenting EβF, the proportion of aphids leaving the test area is not significantly different between individuals reared under ambient or elevated [CO₂] (Mean ± S.E.).

A 200ng synthetic EβF dose was presented to a colony of about 20 adult aphids, in a dynamic headspace system. The number of aphids walking out or dropping from the test zone was counted during 15 minutes.



In conclusions, we observed that aphids tend to produce and emit more EβF when the CO₂ concentration is enhanced. But their escape behavior seems to be not improved when a same dose is presented.

And maybe, in future agro-ecosystems, the escape behavior of aphids will be enhanced, reducing their vulnerability to natural enemies and increasing their bad effect in agriculture.

