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Title:	Sequestration of the plant secondary metabolite, colchicine, by the noctuid moth Polytela gloriosae (Fab.)
Authors:	Navdeep, G. (/jspui/browse?type=author&value=Navdeep%2C+G.) Dorai, K. (/jspui/browse?type=author&value=Dorai%2C+K.)
Keywords:	Polymerization Medicine Mitotic
Issue Date:	2019
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Citation:	Chemoecology, 29(4), pp.135-142.
Abstract:	Colchicine, a well-known alkaloid, is a potent inhibitor of polymerization of tubulin leading to mitotic arrest. It is highly toxic to eukaryotic cells but also widely used in the field of medicine and plant breeding. Gloriosa superba (family: Colchicaceae) is an important natural source of colchicine. The seeds, tubers and leaves of this plant contain about 0.8, 1.2 and 0.014% colchicine by dry weight respectively. A noctuid moth, Polytela gloriosae (family: Noctuidae), feeds voraciously on leaves of G. superba without any adverse effect. However, the fate of colchicine and the mechanisms by which the insect is able to overcome the toxicity of the metabolite is not known. Here, we trace the fate of colchicine in both, the larva and moth of P. gloriosae. Colchicine was quantified in different body parts of the larvae and moth by high performance liquid chromatography, liquid chromatography mass spectrophotometry and nuclear magnetic resonance methods. Of the total colchicine taken in by the larva, a larger portion was excreted, while the rest was sequestered in its cuticle. In the moths however, the wings, legs and antennae were found to accumulate high amount of colchicine. The sequestered colchicine, in both the larva and adult, were chemically identical to that found in the plant. Negligible amounts of demethyl-(−)-colchicine, a less toxic derivative of colchicine was also detected. We discuss the probable adaptive significance of sequestration of colchicine by the insect.
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