

Selective Action of Acetogenin Mitochondrial Complex I Inhibitors

Azucena González-Coloma,^{a,*}, Ana Guadaño^a, Concepción de Inés^a,
Rafael Martínez-Díaz^b and Diego Cortes^c

^a Centro de Ciencias Medioambientales, CSIC, Serrano 115-dpdo., 28006 Madrid, Spain.
Fax: 34-91-5640800. E-mail: azu@ccma.csic.es

^b Departamento de Medicina Preventiva (Parasitología), Facultad de Medicina,
Universidad Autónoma de Madrid, Spain

^c Departamento de Farmacología, Facultad de Farmacia, Universidad de Valencia, Spain

* Author for correspondence and reprint requests

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Five annonaceous acetogenins, rolliniastatin-1 (**1**), rolliniastatin-2 (**2**), laherradurin (**3**), squamocin (**4**), annonacin (**5**), and rotenone as a reference, differing in their NADH oxidase inhibition activity, have been evaluated for antifeedant, insecticidal, trypanocidal and cytotoxic effects on insect, mammalian and tumor cells. All the test compounds were toxic to *Leptinotarsa decemlineata*, demonstrated selective cytotoxicity to insect Sf9 cells and a panel of tumor cell lines with the multidrug-resistant SW480 (P-glycoprotein⁺, Pgp⁺) being the most sensitive one. Compounds **1**, **2**, **4**, and rotenone had post-ingestive effects against *Spodoptera littoralis* larvae while **1**, **4**, **5**, and rotenone were active against *Trypanosoma cruzi*. Based on their biochemical properties (inhibition of the mitochondrial NADH oxidase activity), the *in vivo* effects of these compounds on *S. littoralis* and their cytotoxic effects on Sf9 and tumor cells were more predictable than their effect on *T. cruzi* and mammalian cells.