Alkaloid constituents of the amaryllidaceae plant amaryllis belladonna L

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Author(s) Tallini, Luciana R.; Andrade, Jean Paulo de; Kaiser, Marcel; Viladomat, Francesc; Nair, Jerald J.; Zuanazzi, José Angelo S.; Bastida, Jaume
Author(s) at UniBasel Kaiser, Marcel ;
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The plant family Amaryllidaceae is well-known for its unique alkaloid constituents, which exhibit a wide range of biological activities. Its representative, Amaryllis belladonna, has a geographical distribution covering mainly southern Africa, where it has significant usage in the traditional medicine of the native people. In this study, A. belladonna samples collected in Brazil were examined for alkaloid content. Alkaloid profiles of A. belladonna bulbs were generated by a combination of chromatographic, spectroscopic and spectrometric methods, including GC-MS and 2D NMR. In vitro screening against four different parasitic protozoa (Trypanosoma cruzi, T. brucei rhodesiense, Leishmania donovani and Plasmodium falciparum) was carried out using the A. belladonna crude methanol extract, as well as three of its alkaloid isolates. Twenty-six different Amaryllidaceae alkaloids were identified in the A. belladonna bulb samples, and three of them were isolated. Evidence for their respective biosynthetic pathways was afforded via their mass-spectral fragmentation data. Improved data for 1-O-acetylcaranine was provided by 2D NMR experiments, together with new ź H-NMR data for buphanamine. The crude extract and 3-O-acetylhamayne exhibited good antiprotozoal activity in vitro, although both with a high cytotoxic index.
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