



## A NOVEL DIMERIC HYDRONAPHTHOQUINONE FROM *Sinningia warmingii* TUBERS (GESNERIACEAE)

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**Abstract:** *Sinningia warmingii* (Hiern.) Chautems (Gesneriaceae) is an herbaceous plant, with perennial tubers and annual shoots, largely distributed in South America (Brazil, Colombia, Ecuador, Peru, Bolivia, Paraguay and Argentine) [1]. Several aromatic compounds have been previously reported from this plant [2]. The aim of the present work was continuing the phytochemical study of *S. warmingii*. The tubers were collected in Londrina, Paraná State, Brazil. It were dried, milled and then extracted with hexane, dichloromethane, ethyl acetate and ethanol, successively, at room temperature. Dichloromethane and hexane extracts were combined and fractionated by chromatographic techniques. The compounds were identified by spectrometric techniques as NMR 1D and 2D, HRMS and X-ray. This procedure yielded two known compounds, aggregatins E (**1**) and F (**2**) [3], and a novel dimeric hydronaphthoquinone (**3**) (Figure 1). The HRMS of **3** showed a peak at  $m/z$  501.12281 ( $M^+ + Na$ ), indicating the molecular formula  $C_{30}H_{22}O_6$ . The <sup>1</sup>H NMR spectrum of **3** was very similar to that **1**, but was lacking the signal of H-6. In the HSQC and HMBC spectra only fifteen carbons were observed. These data suggested a dimeric structure. Analysis of a single crystal on an X-ray diffractometer led to structure of **3**, a symmetric dimer, probably derivate from coupling of two unities of aggregatin E (**1**). This compound, named warmingiin, presents a novel carbon skeleton and its absolute configuration was determinate as 3*R*, 3'*R*, 11*b**S*, 11*b*'*S*.

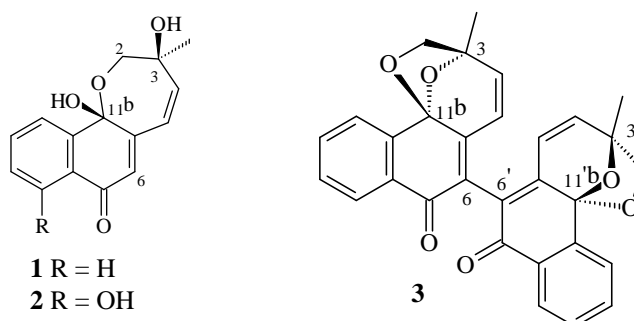


Figure 1: Structures of the compounds 1-3.

### References:

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- [2] Verdan, M.H., Ehrenfried, C.A., Scharf, D.R., Cervi, A.C., Salvador, M.J., A. Barison and Stefanello, M.E.A. 2014. Chemical constituents from *Sinningia canescens* and *S. warmingii*. Nat. Prod. Comm. 9: 1535-1537.
- [3] Verdan, M.H., Souza, L.M., Carvalho, J.E., Costa, D. B. V., Salvador, M.J., A. Barison and Stefanello, M.E.A. 2015. Two new hydronaphthoquinones from *Sinningia aggregata* (Gesneriaceae) and cytotoxic activity of aggregatin D. Chem. Biodiv. 12: 148-152.