

Phytogrowth-Inhibitory Lactones Derivatives of Glaucolide B

Luiz Cláudio de A. Barbosa^{a,*}, Adilson V. Costa^a, Dorila Piló-Veloso^b,
Joao Luiz C. Lopes^c, Manuel G. Hernandez-Terrones^d, Beatriz King-Diaz^e, and
Blas Lotina-Hennsen^{e,*}

^a Departamento de Química, Universidade Federal de Vicosa, 36571-000, Vicosa – MG, Brazil. Fax: +31 38 99 3065. E-mail: lcab@ufv.br

^b Departamento de Química, Universidade Federal de Minas Gerais, Belo Horizonte – MG, Brazil

^c Faculdade de Ciencias Farmaceuticas de Ribeirao Preto, USP, Sao Paulo – SP, Brazil

^d Instituto de Química, Universidade Federal de Uberlandia, Uberlandia – MG, Brazil

^e Departamento de Bioquímica, Facultad de Química, Universidad Nacional Autónoma de México, Ciudad Universitaria, México D. F. 04510, México. Fax: +55 56 22 53 29. E-mail: blas@servidor.unam.mx

* Authors for correspondence and reprint requests

Z. Naturforsch. **59c**, 803–810 (2004); received April 15/June 22, 2004

The sesquiterpene lactone glaucolide B (**1**), isolated from *Vernonia fruticulosa* (Asteraceae), was transformed into six lactones (**2–7**). The structures of the products were elucidated by spectroscopic analysis. A series of solutions of compounds **1–7**, at 200 μM , were tested on the germination and on the root and shoot growth of the dicotyledons *Physalis ixocarpa* and *Trifolium alexandrinum* and of the monocotyledons *Lolium multiflorum* and *Amaranthus hypochondriacus*. Lactone **5** exhibited clear selectivity towards dicotyledonous species at 200 μM , with an average inhibition of 90% on the germination of *P. ixocarpa*. Lactones **1**, **3** and **4** had a greater effect on root length of monocotyledonous species, inhibiting around 70% at 200 μM in *L. multiflorum*. It seems that the diol function is required in lactones **4–6** to increase the activity, the polarity in the molecule might be required to reach its target.

Key words: Sesquiterpene Lactones, Herbicidal Activity, Germination and Growth Inhibition