International Conference on Natural Products and Physiologically Active Substances (ICNPAS-2004)
September 12-17, 2004, Novosibirsk, Russia
Poster Presentation

Synthesis of Virgatol and Virgatenol, Two Naturally Occurring Coumarins from *Pterocaulon Virgatum* (L.) DC and 7-(2,3-Epoxy-3-methylbutoxy)-6-methoxycoumarin, Isolated from *Conyza Obscura* DC

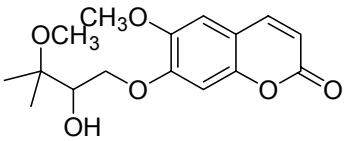
Dominick Maes,[1] Stijn Vervisch,[1] Silvia Debenedetti,[2]
Jan Demyttenaere[1] and Norbert De Kimpe[1]

[1]*Department of Organic Chemistry, Faculty of Agricultural and Applied Biological Sciences, Ghent University, Coupure Links 653, B-9000 Ghent, Belgium;*
[2]*Department of Biological Sciences, University of La Plata, Calle 115 and 47, 1900 La Plata, Argentina*

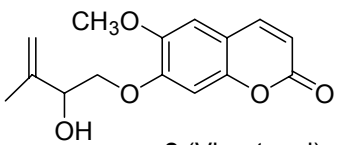
A very large number of coumarins have been isolated from plants. The last decennia, there is a renewed interest in coumarins which have two or more oxygen substituents. Since the 1990´s a large number of *in vivo* and *in vitro* studies has revealed a diverse array of pharmacological and biochemical properties for these polyoxygenated coumarins, some of which are of potential pharmaceutical interest.

In a previous work we described the isolation and structural elucidation of a number of di- and trioxygenated coumarins from Argentine medicinal plants. Our recent findings on interesting physiological activities, such as the determination of antiproliferation and differentiation activity of these coumarins encouraged us to initiate a program for the synthesis of a whole range of coumarins isolated from the *Asteraceae* family.

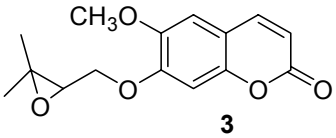
The present report deals with the synthesis of three coumarins virgatol **1**, virgatenol **2** and 7-(2,3-epoxy-3-methylbutoxy)-6-methoxycoumarin **3** *via* a synthesis of the coumarin scopoletin **4** which holds a fundamental position in coumarin chemistry.



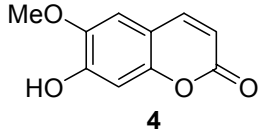
1 (Virgatol)



2 (Virgatenol)



3



4

The former two coumarins, virgatol **1** and virgatenol **2** have been described as new isolated compounds from *Pterocaulon virgatum* (L.) DC and *P. polystachium* DC while the latter coumarin **3** has been isolated from *Conyza obscura* DC. Although 6,7-dioxygenated coumarins are quite common in plants, the synthesis of compound **1-3** has not been reported to date.