Diploflavone A, a new flavonoid from *Diplotropis ferruginea* Benth. (Fabaceae)

Jackson Roberto Guedes da Silva Almeida[1] (PG), Emidio Vasconcelos Leitão da Cunha[1] (PQ), Marcelo Sobral da Silva[1] (PQ), Raimundo Braz-Filho[2] (PQ), José Maria Barbosa-Filho[1*] (PQ). E-mail: jbarbosa@ltf.ufpb.br

[1]*Laboratório de Tecnologia Farmacêutica, Universidade Federal da Paraíba, Caixa Postal 5009, 58051-970, João Pessoa, Paraíba, Brazil.* [2]*Setor de Química de Produtos Naturais, CCT, Universidade Estadual do Norte Fluminense, 28015-620, Campos, Rio de Janeiro, Brazil.*

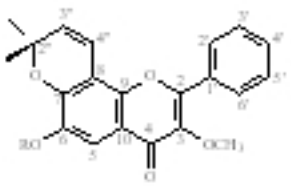
Palavras Chave: *Diplotropis ferruginea*, *Fabaceae*, *Flavonoids*

Introduction

Diplotropis ferruginea Benth. is a species native to Northeastern Brazil, were it is popularly known as "sucupira-preta". It is used in folk medicine for the treatment of rheumatism, arthritis and diabetes[1]. Recently, a chemical investigation of this species resulted in the isolation of lupeol, ethyl 2-hydroxy-4-methoxy-6-propyl benzoate[2] and of the flavonoid 3,4',5,8-tetramethoxy-(6,7,2'',3'')-furanoflavan[3].
Spasmolitic activity was reported for the crude EtOH extract of this plant[4]. This work describes the isolation of two flavonoids, whose structures were stablished by spectrometric techniques, mainly EIMS and 1D and 2D NMR.

Results and Discussion

The stem bark was extracted with ethanol and this extract was partitioned between hexane, $CHCl_3$ and $CHCl_3$:MeOH (7:3). The hexane fraction was subjected to column chromatography over silica gel yielding substances (1) and (2) (Figure 1). Compound 1 is an amorphous solid and had its molecular formula deduced as $C_{26}H_{26}O_5$, supported by the occurrence of the molecular ion at *m/z* 418 in the MS, in combination with ^{1}H NMR (1D and 2D ^{1}H-^{1}H-COSY) and ^{13}C-APT NMR spectral data. The IR spectrum revealed bands at ν_{max} 1620, 3062, 1379-1404 cm^{-1}. Unambiguous assignments for the NMR chemical shifts of all hydrogen and carbon atoms are given in Table 1. Compound 2, mp 203 °C, the molecular formula was deduced as $C_{22}H_{20}O_5$, confirmed by molecular ion at *m/z* 364 in the MS in combination with ^{1}H NMR (1D and 2D ^{1}H-^{1}H-COSY) and ^{13}C-APT NMR spectral data. IR and ^{1}H and ^{13}C NMR spectra showed the similarity with substance 1. The only difference between the two substances was the absence of the prenyl moiety in 2, having a methoxy in the same position. Unambiguous assignments for the NMR chemical shifts of all the hydrogen and carbon atoms are given in Table 2.



(1) R =

(2) R = CH_3

Figure 1. Flavonoids from *Diplotropis ferruginea* Benth.

Conclusion

The analysis of the all spectral data for 1 led to elucidation of its structure as 3-methoxy-6-*C*-prenyl-6'',6''-dimethylchromene-(7,8,2'',3'')-flavone. This substance is described here for the first time and was given the trivial name diploflavone A. The substance 2 was characterized as the flavonoid 3,6-dimethoxy-6'',6''-dimethylchromene-(7,8,2'',3'')-flavone, previously isolated from *Bowdichia virgilioides*[5].

Acknowledgements

The authors are grateful to the Instituto do Milênio do Semi-Árido (IMSEAR/CNPq), CAPES and FAPERJ by financial support. Sincere thanks are also due to NAPRALERT.

[1] Correa, M. P. *Dicionário das plantas úteis do Brasil*, 1984, IBDF, Ministerio da Agricultura, v. VI.
[2] Almeida, J. R. G. S., Cunha, E. V. L., Silva, M. S., Athayde-Filho, P. F., Braz-Filho, R., Barbosa-Filho, J. M. *Rev. Bras. Farmacogn.*, 2003, *13, Suppl. 2*, 44-46.
[3] Almeida, J. R. G. S., Cunha, E. V. L., Silva, M. S., Braz-Filho, R., Marques, A. S., Zheng C., Barbosa-Filho, J. M. *Annals of Magnetic Resonance* (Submitted).
[4] Lima, J. T., Claudino, F. S., Cavalcante, F. A., Almeida, J. R. G. S., Barbosa-Filho, J. M., Silva, B. A. *Rev. Bras. Ci. Farm.*, 2003, *39, Suppl. 2*, 58.
[5] Arriaga, A. M. C., Gomes, G. A., Braz-Filho, R. *Fitoterapia*, 2000, *26*, 2819-2823.