3º Encontro Nacional de QUÍMICA ORGÂNICA

Universidade da Beira Interior

Covilhã, 23-26 de Junho de 1999

Sociedade Portuguesa de Química

P25

SYNTHESIS OF 2-STYRYLCHROMONES WITH POTENTIAL ANTIOXIDANT ACTIVITY

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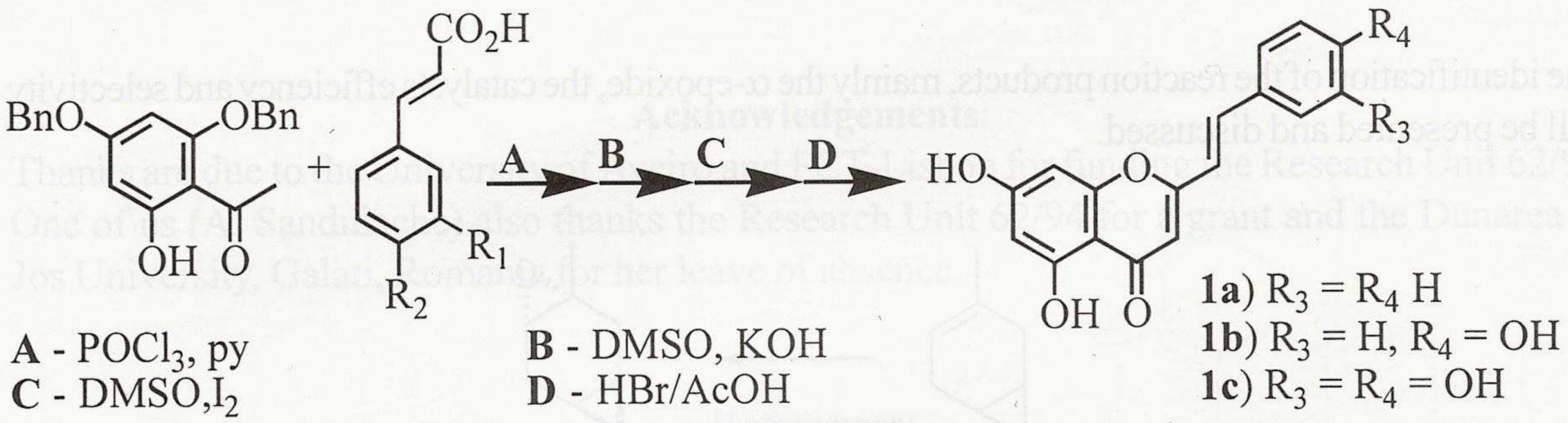
The flavonoids are a well-studied class of secondary metabolites; over the years some of these substances have been found to be an important part of the human diet. Several biological properties have been attributed to them, including biocidal, pharmacological and antioxidant activities. The antioxidant activity of these compounds is due to their ability to scavenge radical species and to function as metal chelators, and this is especially important with respect to the retarding of rancidity and extending the shelf life of foodstuffs [1].

Some structure/activity studies of the antioxidant activity of flavonoids revealed that features for a high antioxidant activity are the presence of hydroxyl substituents in certain positions of their skeleton (5,7,3' and 4') and a 2,3-double bond [1]. Taking that into consideration, we started a project aiming the synthesis and evaluation of the antioxidant activity of some 2-styrylchromones. We report here the synthesis of some polyhydroxy-2-styrylchromones **1** with potential antioxidant activity, starting from simple compounds. Experimental procedures and spectroscopic characterisations of chromones **1** and of all the corresponding intermediates will be presented and discussed.



Acknowledgements: Thanks are due to the University of Aveiro and FCT-Portugal, for funding the Research Unit 62/94.

[1] a) W. Bors, W. Heller, C. Michel, K. Stettmaier, in *Handbook of Antioxidants*, Ed. E. Cadenas and L. Packer, Marcel Dekker, New York, **1996**, p. 408. b) C. A. Rice-Evans, N. J. Miller, G. Paganga, *Free Radic. Biol. Med.*, **1996**, *20*, 933.

3º E N Q O

3º Encontro Nacional de QUÍMICA ORGÂNICA

Universidade da Beira Interior, 23 a 26 de Junho de 1999

CERTIFICADO DE PARTICIPAÇÃO

Clementina Maria M. Santos

Participou no 3º Encontro Nacional de Química Orgânica, realizado na Universidade da Beira Interior, de 23 a 26 de Junho de 1999.

A Comissão Organizadora

SYNTHESIS OF 2-STYRYLCHROMONES WITH POTENCIAL ANTIOXIDANT ACTIVITY

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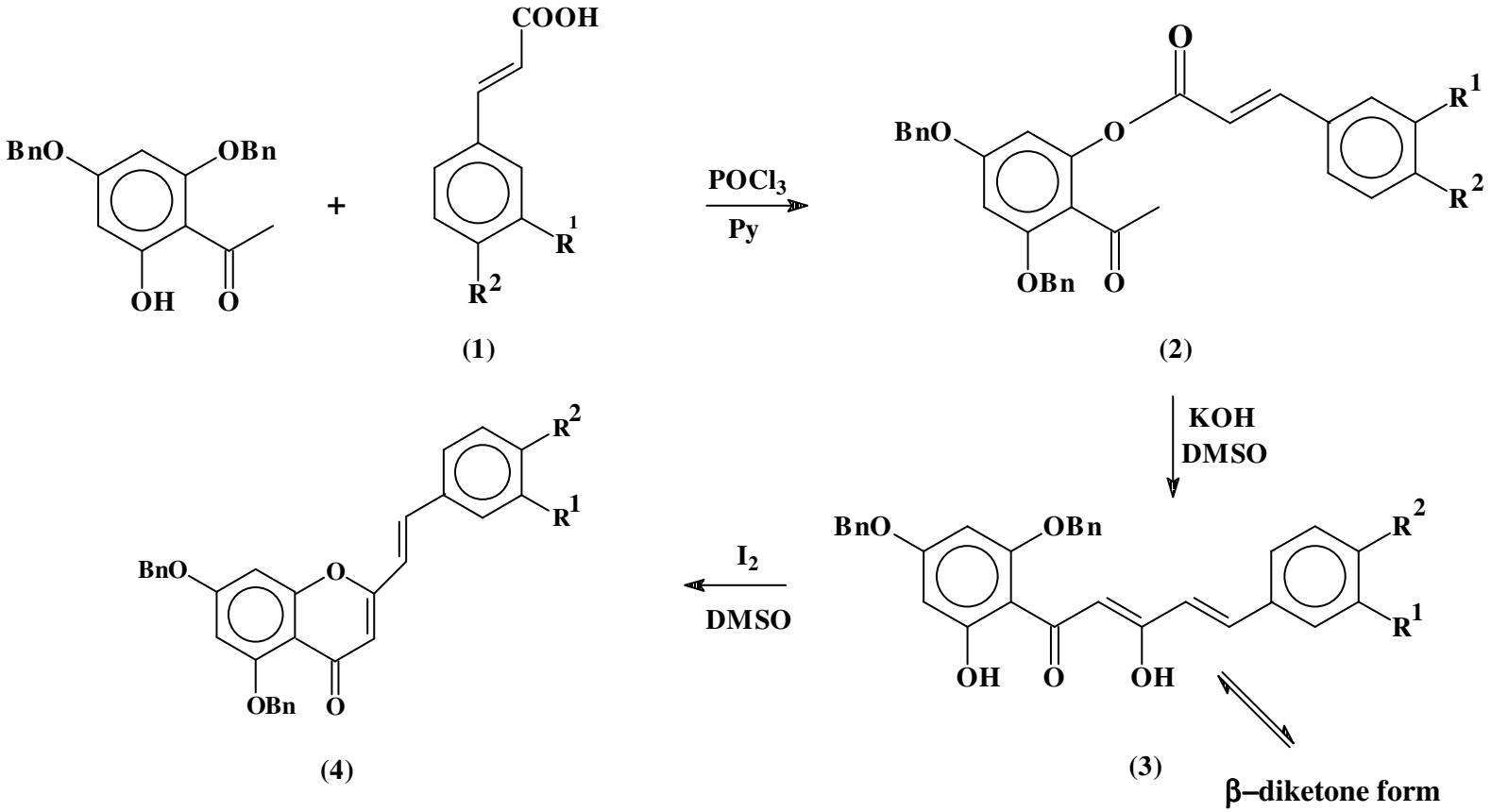
Introduction

- The flavonoids are secondary metabolites with several biological properties, including biocidal, pharmacological and antioxidant activities.

- The antioxidant activity of these compounds is due to their ability to scavenge radical species and to function as metal chelators[1].

- Structure/activity studies revealed that the presence of hydroxyl substituents in the positions 5, 7, 3' and 4' and a 2,3-double bond are required for a high antioxidant activity[1].

- Taking these studies into consideration we report the synthesis of polyhydroxy-2-styrylchromones.



1-4 a) $R^1 = R^2 = H$

b) $R^1 = H$; $R^2 = OBn$

c) $R^1 = R^2 = OBn$

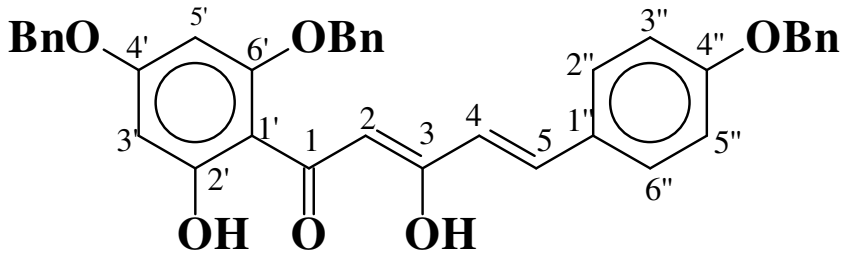
5 a) $R^3 = R^4 = H$

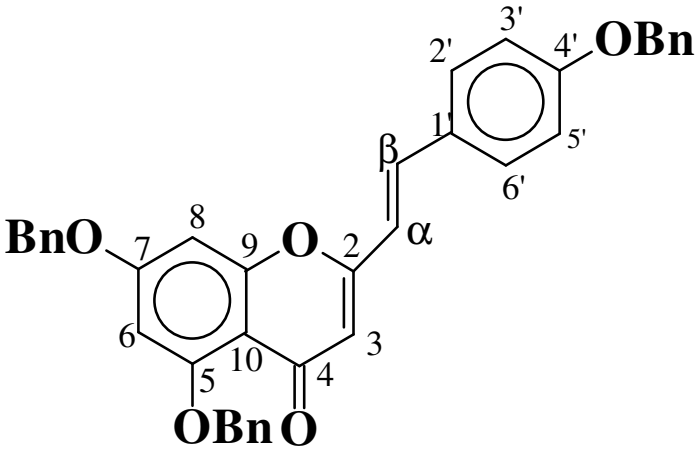
b) $R^3 = H$; $R^4 = OH$

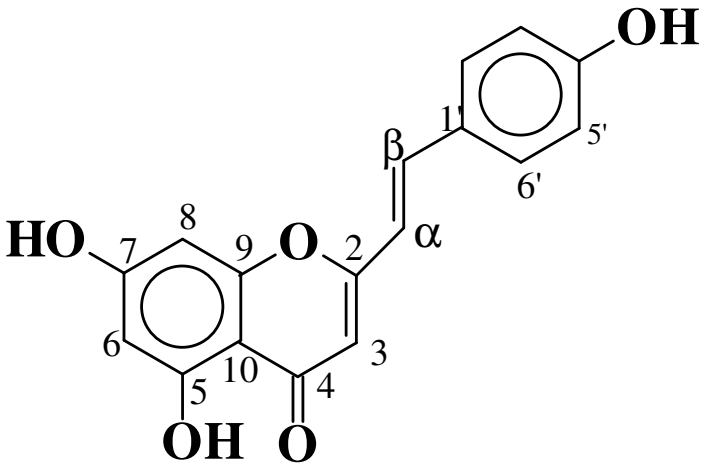
c) $R^3 = R^4 = OH$

Acknowlegements

Thanks are due to the University of Aveiro and FCT-Portugal, for funding the Research Unit 62/94. One of us (C.M.M. Santos) also thanks the University of Aveiro for a grant.

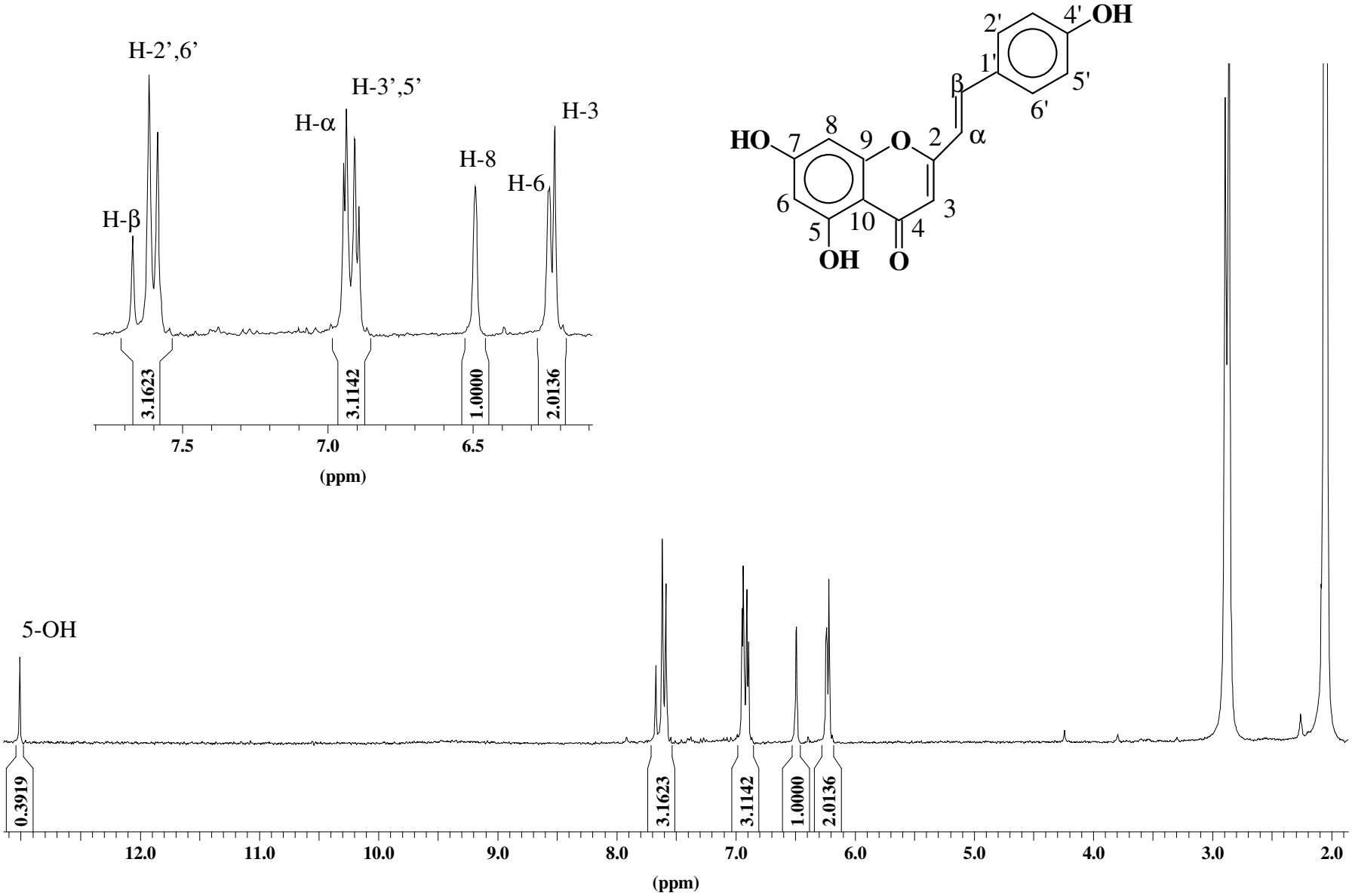

BnO
OBn
OBn
OH
O
OH

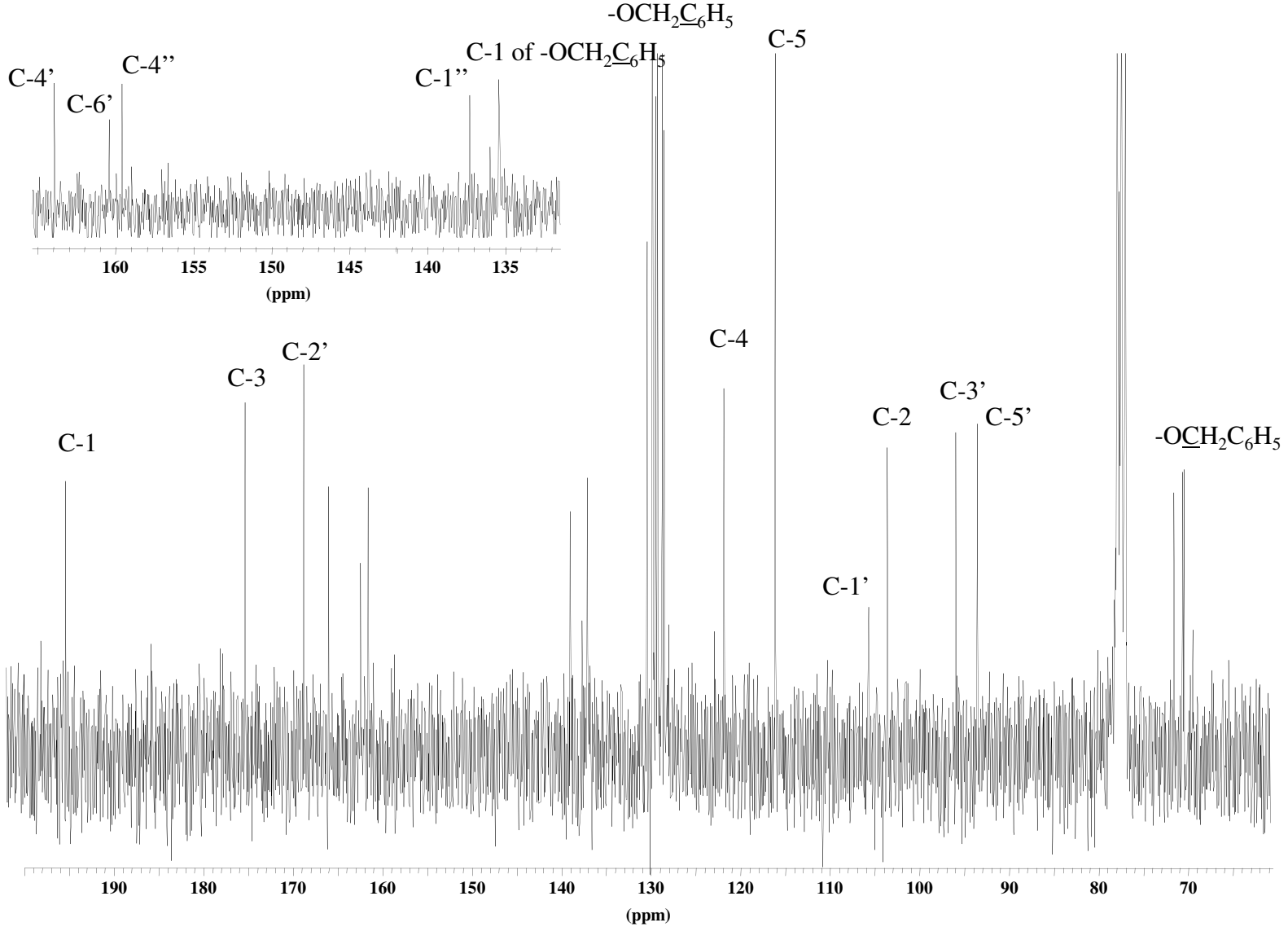

BnO
O
OBn
O
OBn

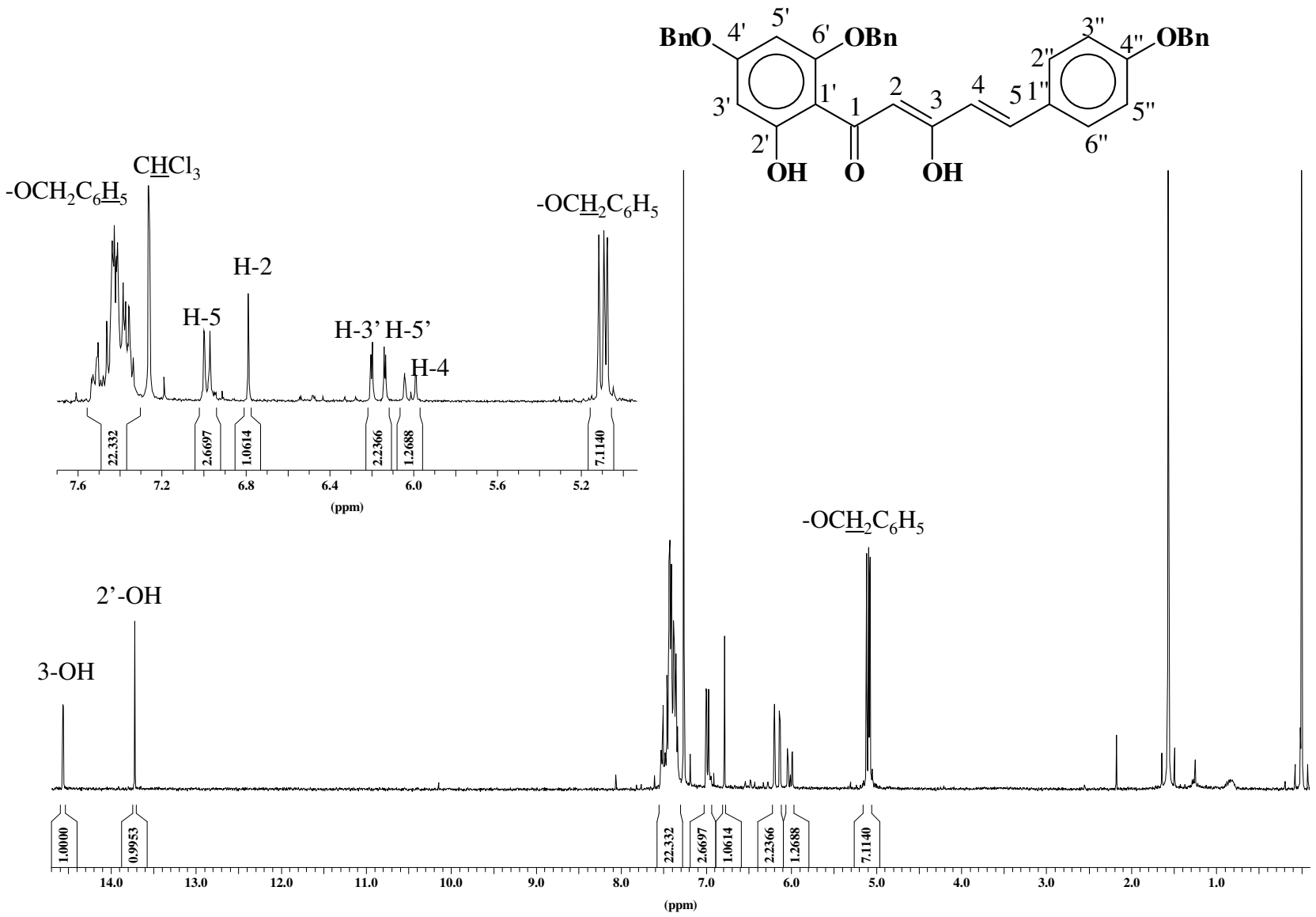

OH
HO
O
OH
O

References

[1] a) W. Bors, W. Heller, C. Michel, K. Stettmaier, in *Handbook of Antioxidants*, Ed. E. Cadenas and L. Packer, Marcel Dekker, New York, **1996**, p. 408 b) C. A. Rice-Evans, N. J. Miller, G. Paganga, *Free Radic. Biol. Med.*, **1996**, 20, 933.


H-2',6'
H-3',5'
H-α
H-3
H-8
H-6
H-β
3.1623
3.1142
1.0000
2.0136
7.5
7.0
6.5
(ppm)
HO
OH
O
4' OH
2'
1'
5'
6'
β
α
5-OH
0.3919
3.1623
3.1142
1.0000
2.0136
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
(ppm)


-OCH2C6H5
C-5
C-4'
C-4''
C-6'
C-1''
C-1 of -OCH2C6H5
C-4
C-3
C-2'
C-3'
C-2
C-5'
C-1
-OCH2C6H5
C-1'
160
155
150
145
140
135
(ppm)
190
180
170
160
150
140
130
120
110
100
90
80
70
(ppm)


BnO
OBn
OBn
OH
O
OH
-OCH2C6H5
CHCl3
H-2
H-5
H-3' H-5'
H-4
-OCH2C6H5
-OCH2C6H5
2'-OH
3-OH
(ppm)
(ppm)