

7.0. ANEXO

7.1. Produção científica.

Quim. Nova, Vol. 31, No. 7, 1670-1671, 2008

Artigo

ATIVIDADE BIOLÓGICA DO LAPACHOL E DE ALGUNS DERIVADOS SOBRE O DESENVOLVIMENTO FÚNGICO E EM GERMINAÇÃO DE SEMENTES

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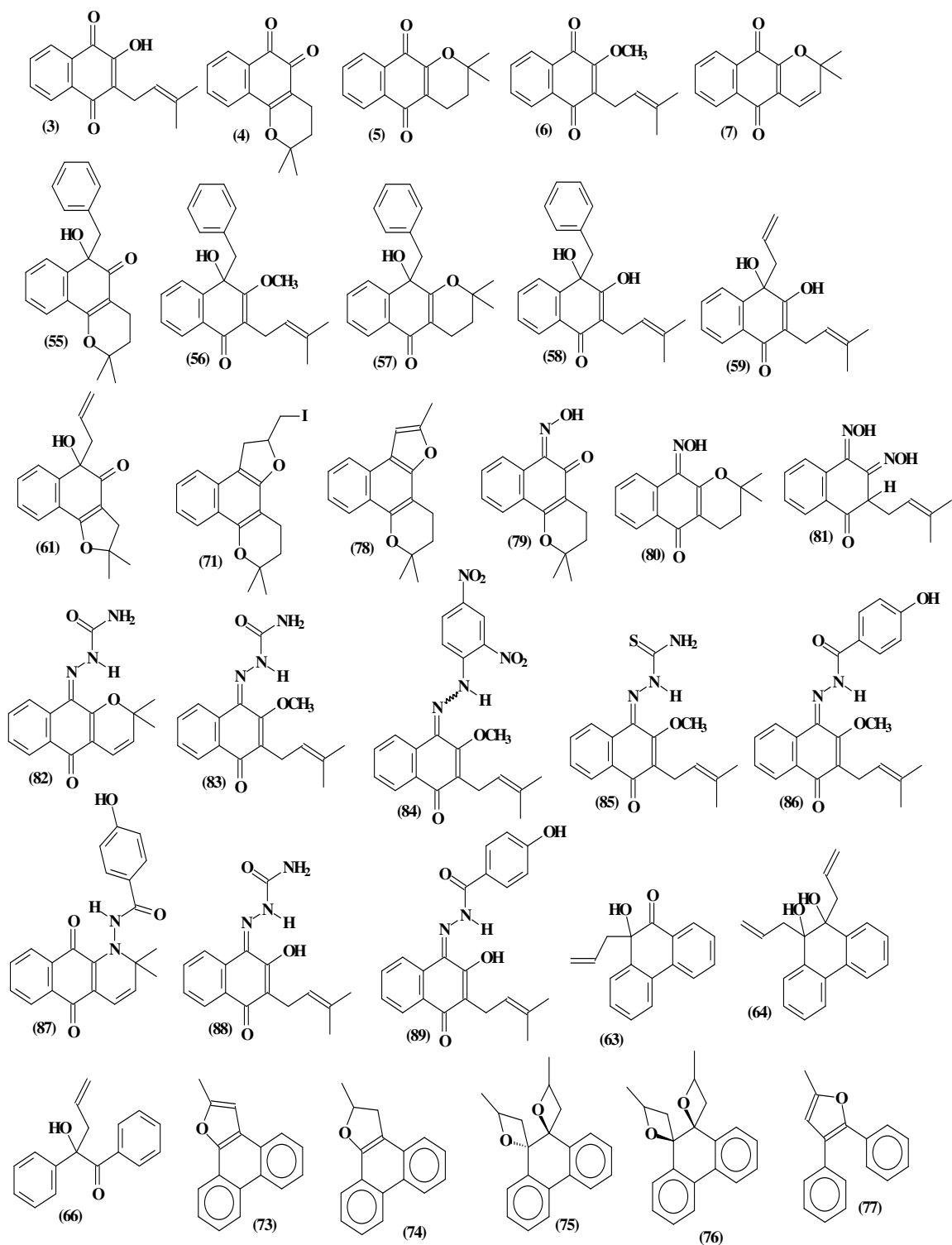
Short Report

Synthesis of Imidazole Derivatives from β -Lapachone and Related Compounds using Microwave and Supported Reagents

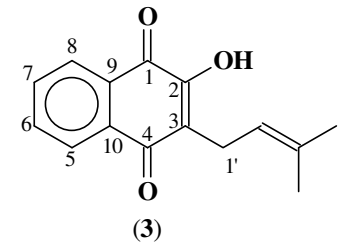
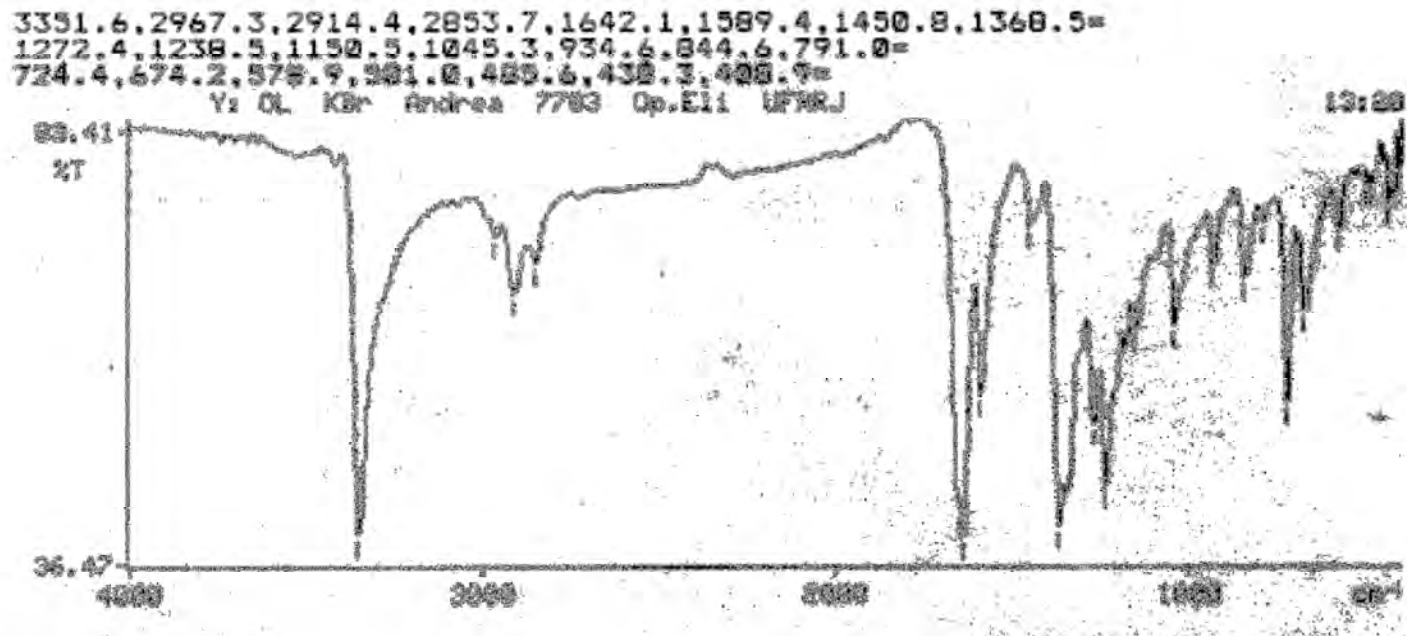
Andrea Rosane da Silva, Ari Miranda da Silva, Aurélio Baird Buarque Ferreira,
Bauer de Oliveira Bernardes and Roberta Lindolfo da Costa*

Programa de Pós-Graduação em Química, Departamento de Química, Instituto de Ciências Exatas, Universidade Federal Rural do Rio de Janeiro, km 7, BR 465, Seropédica, 23.890-000 Rio de Janeiro-RJ, Brazil

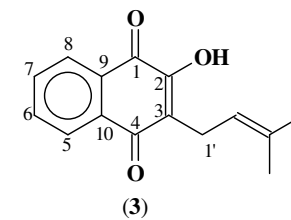
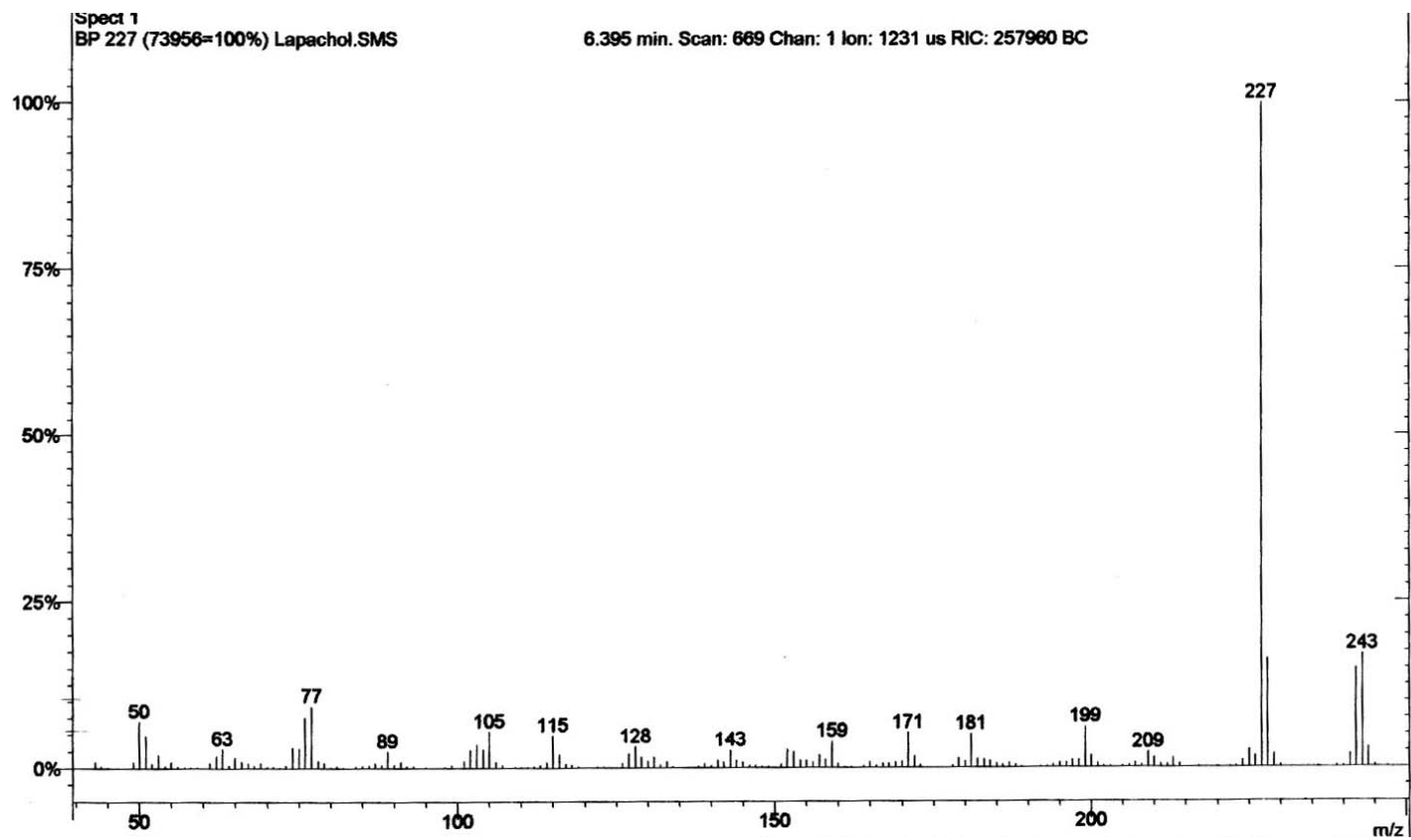
7.2. Compostos.



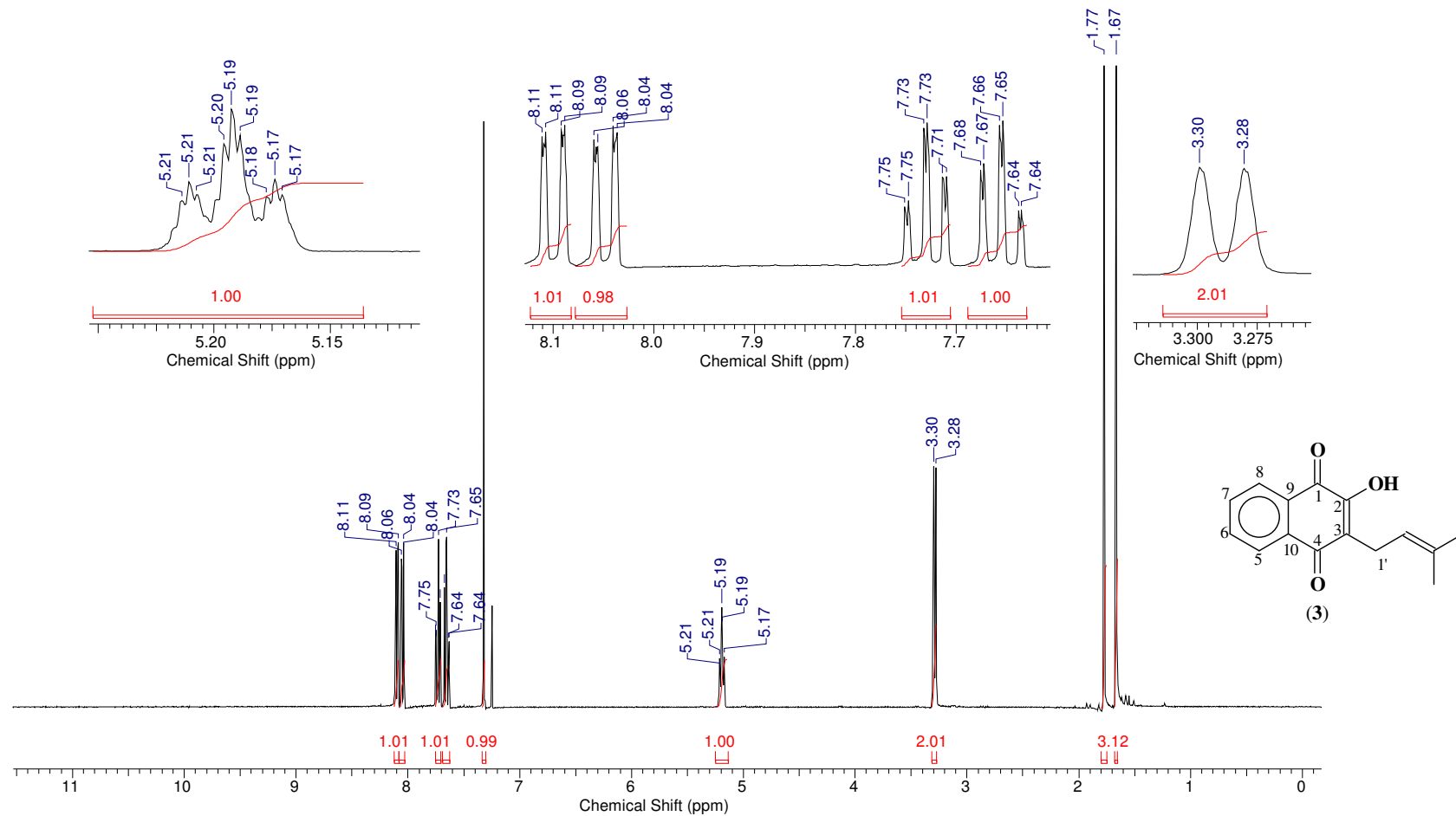
7.3. Espectros.



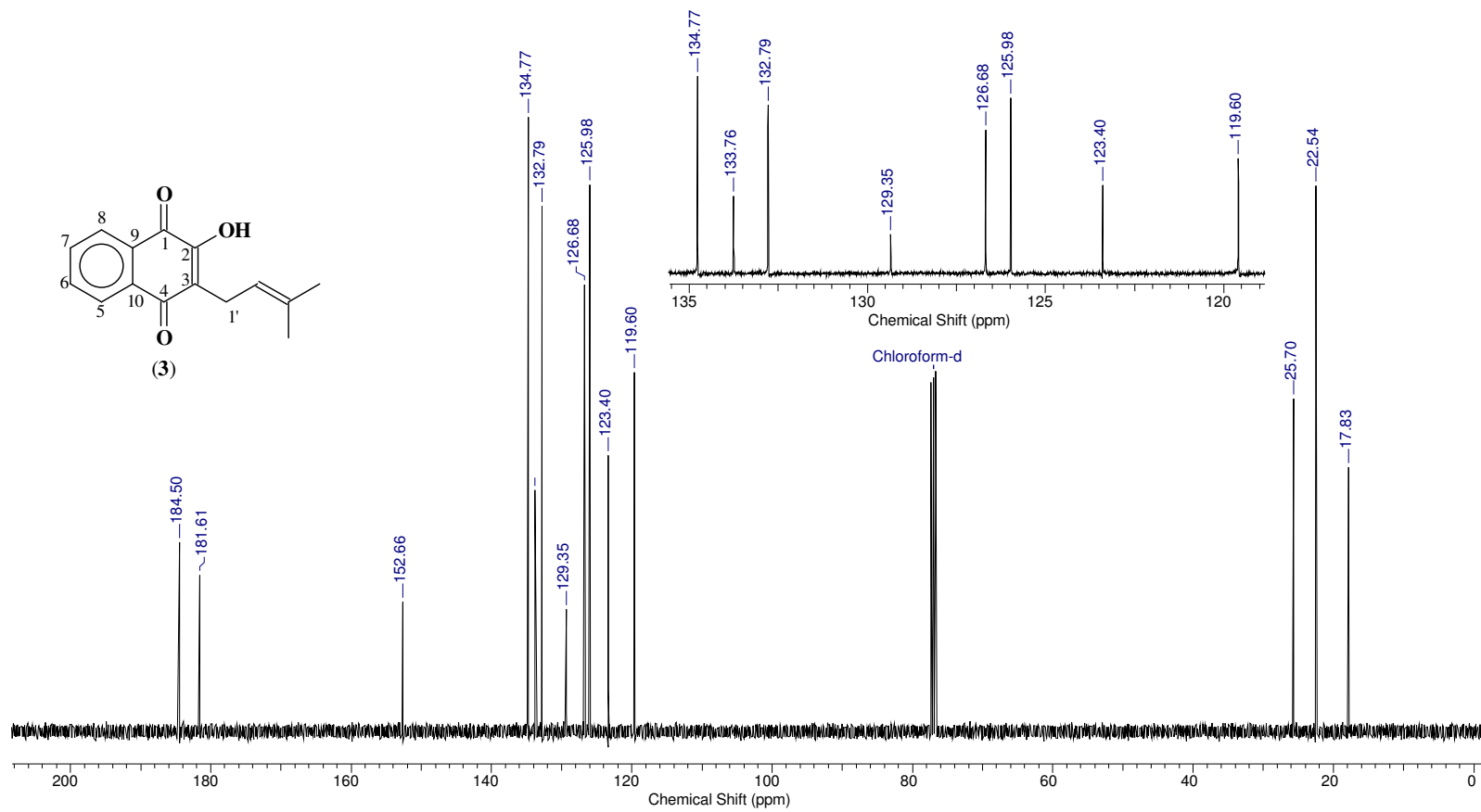
Espectro 1: IV do lapachol (3).



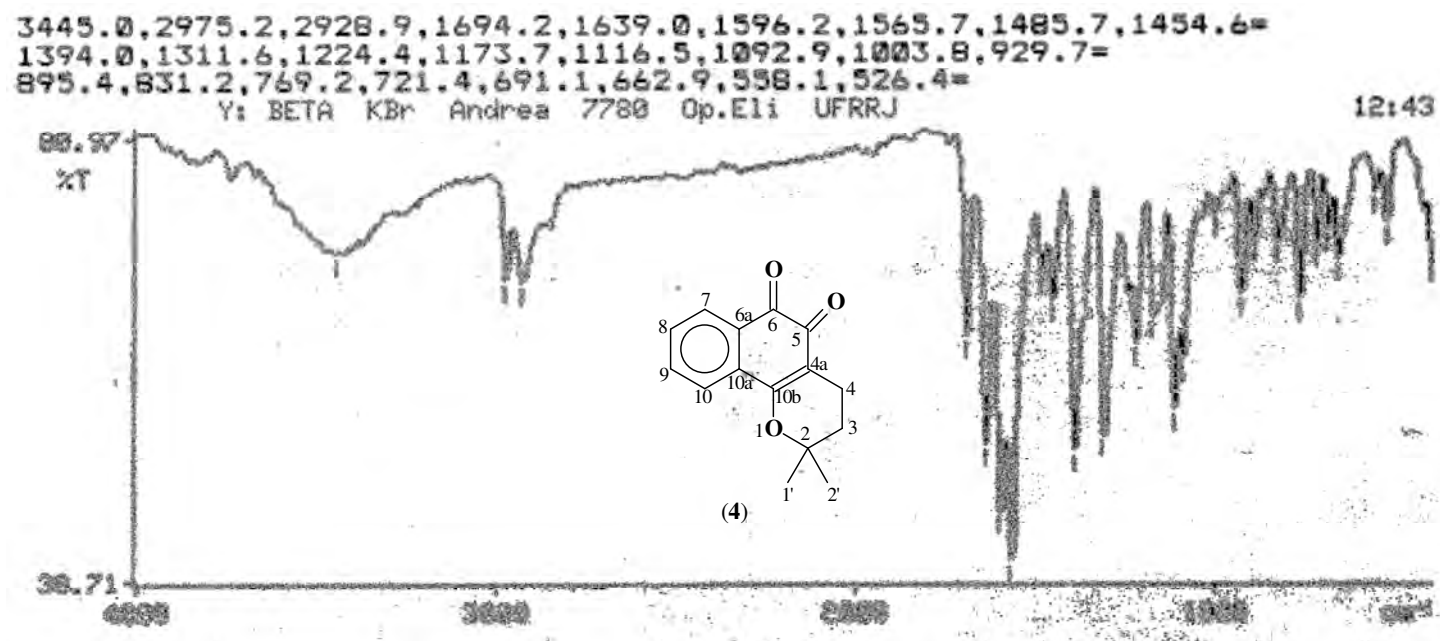
Espectro 2: EM do lapachol (3).



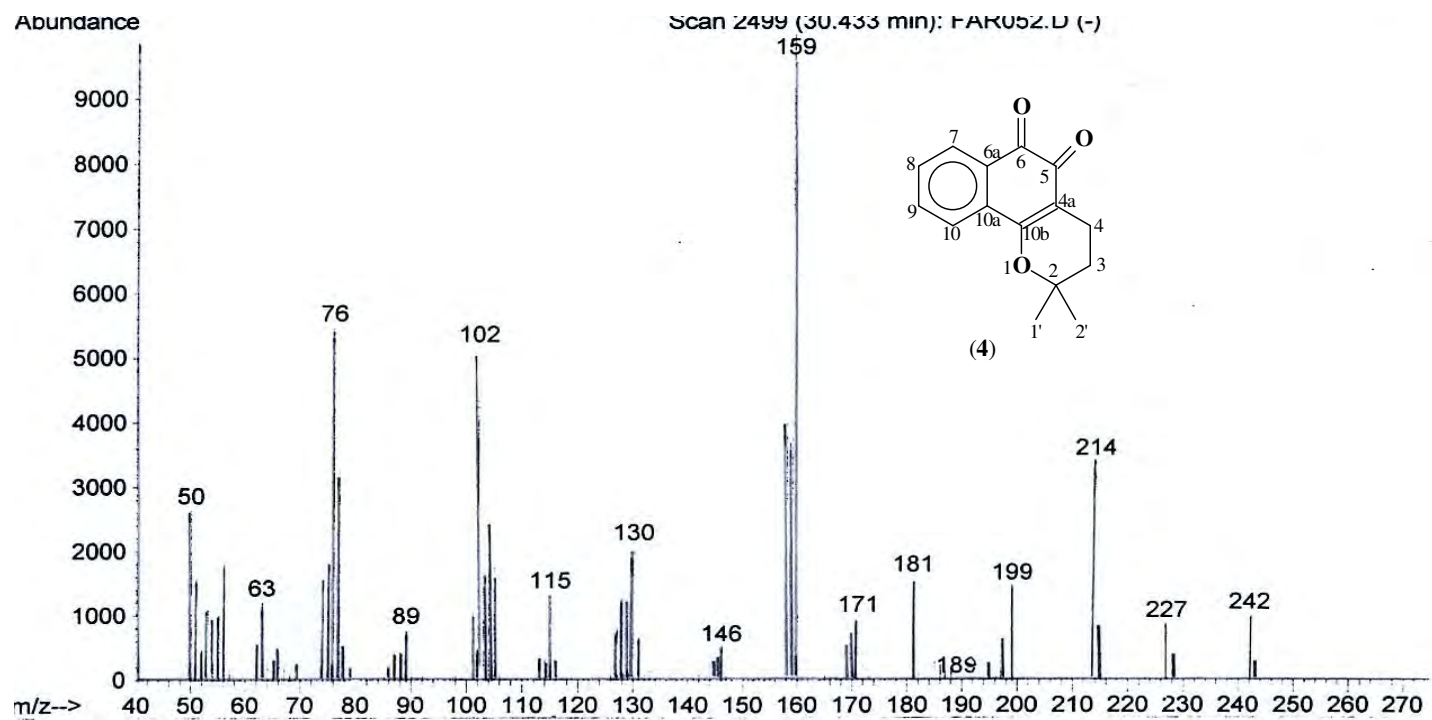
Espectro 3: RMN de ^1H do lapachol (3).



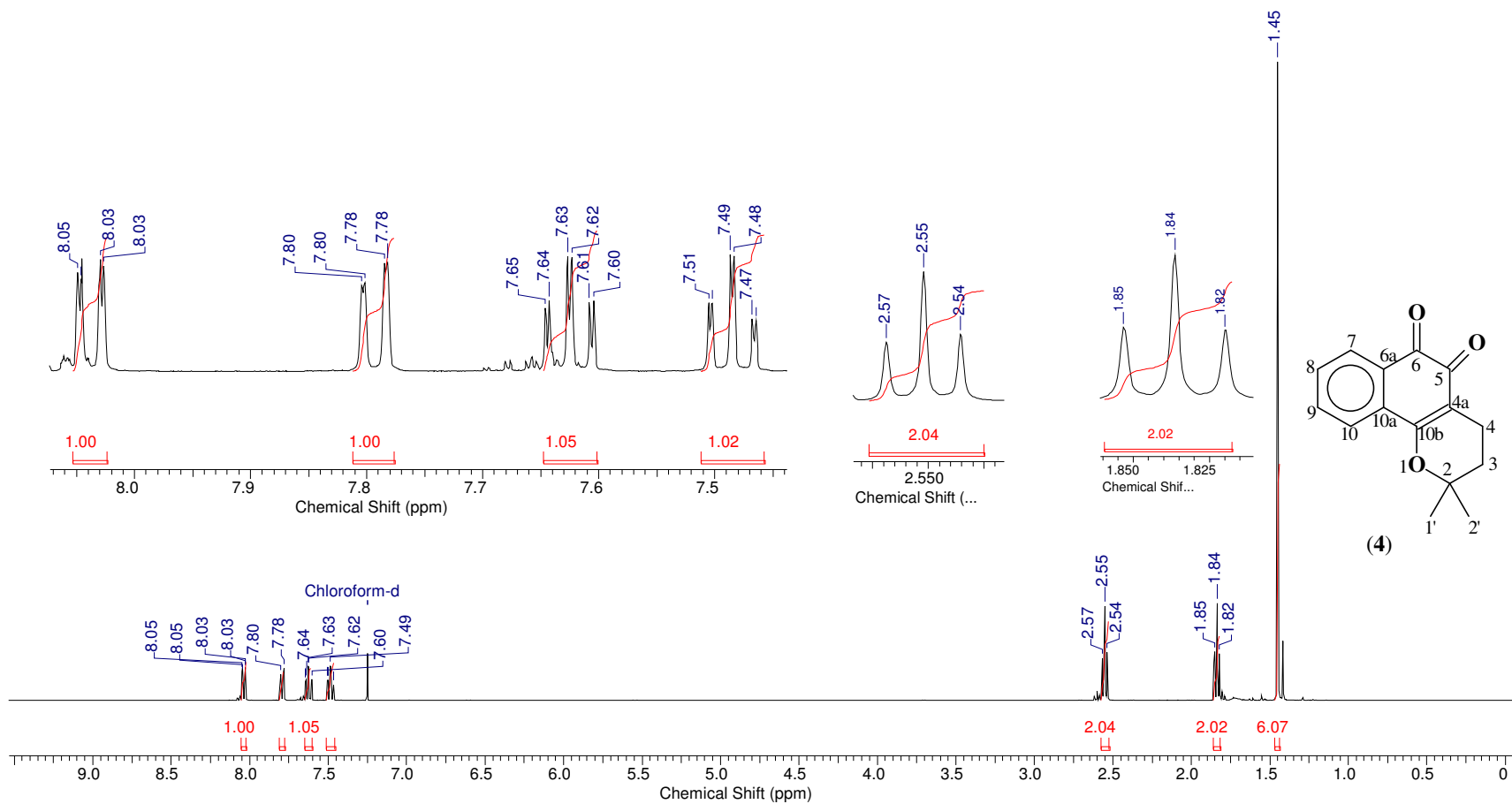
Espectro 4: RMN de ¹³C do lapachol (3).



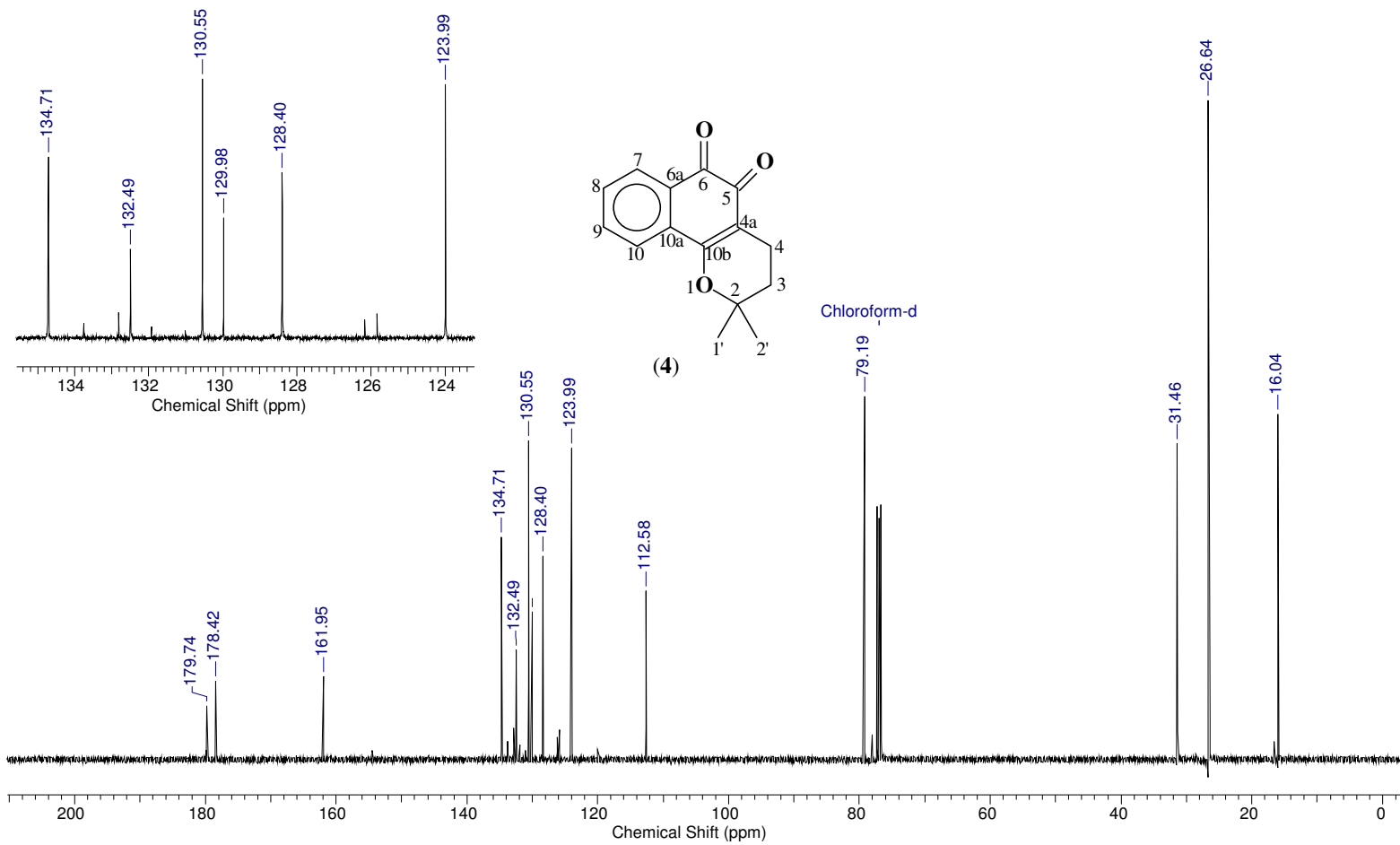
Espectro 5: IV da β -lapachona (4).



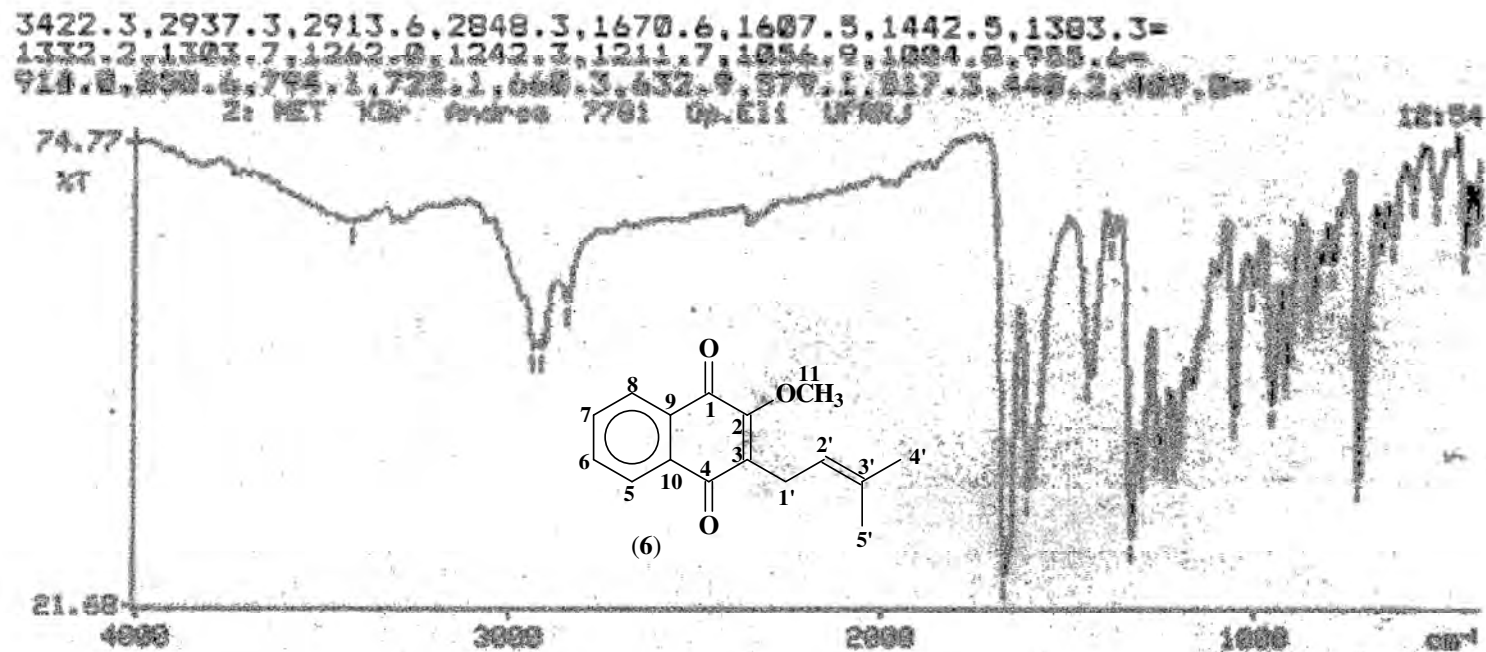
Espectro 6: EM da β -lapachona (4).



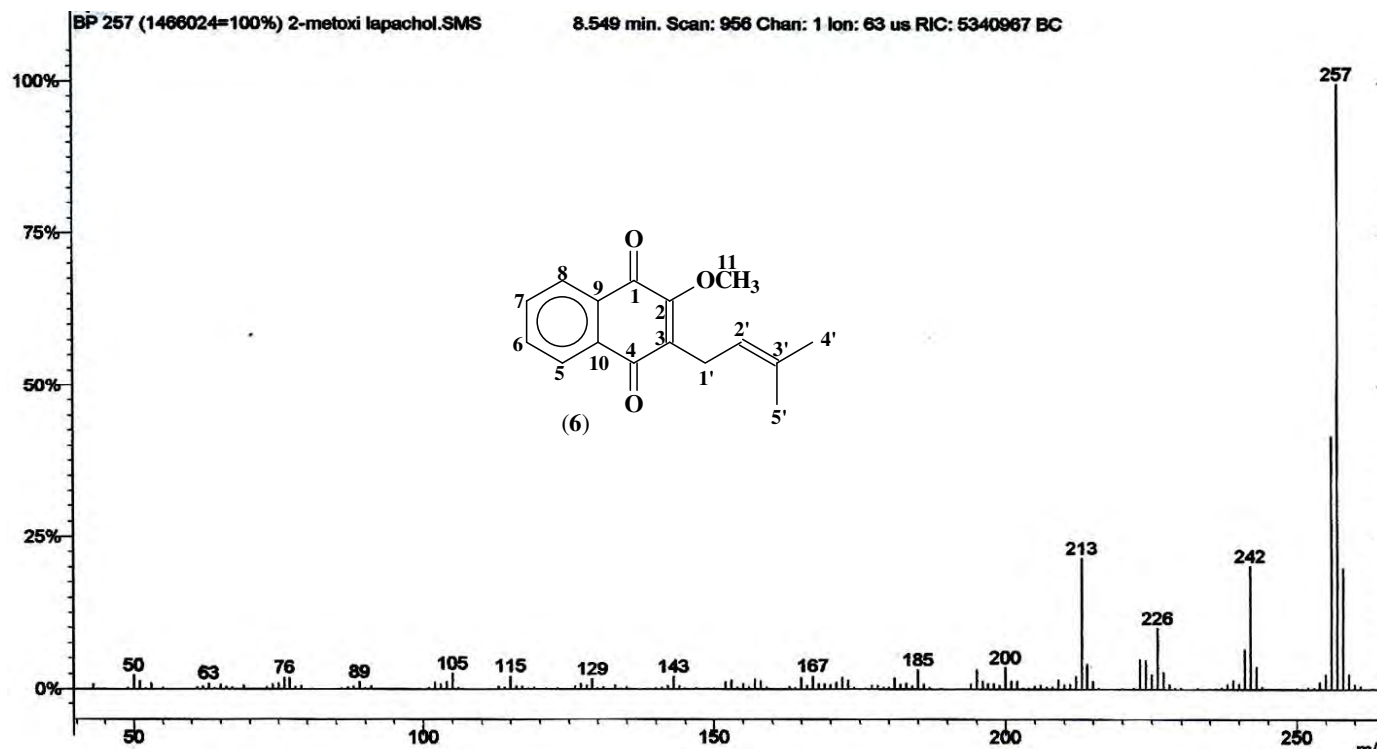
Espectro 7: RMN de ^1H da β -lapachona (**4**).



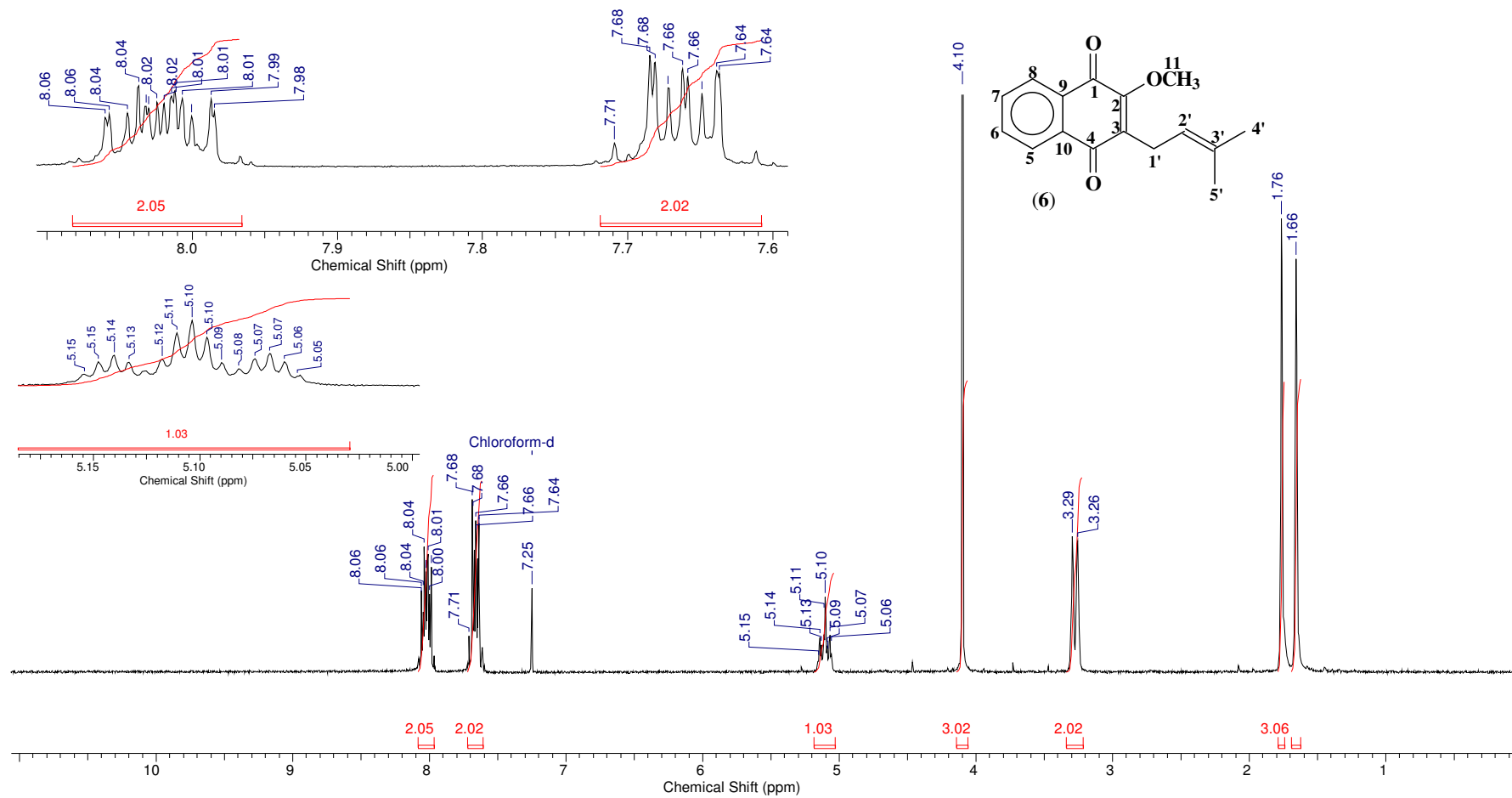
Espetro 8: RMN de ^{13}C da β -lapachona (4).



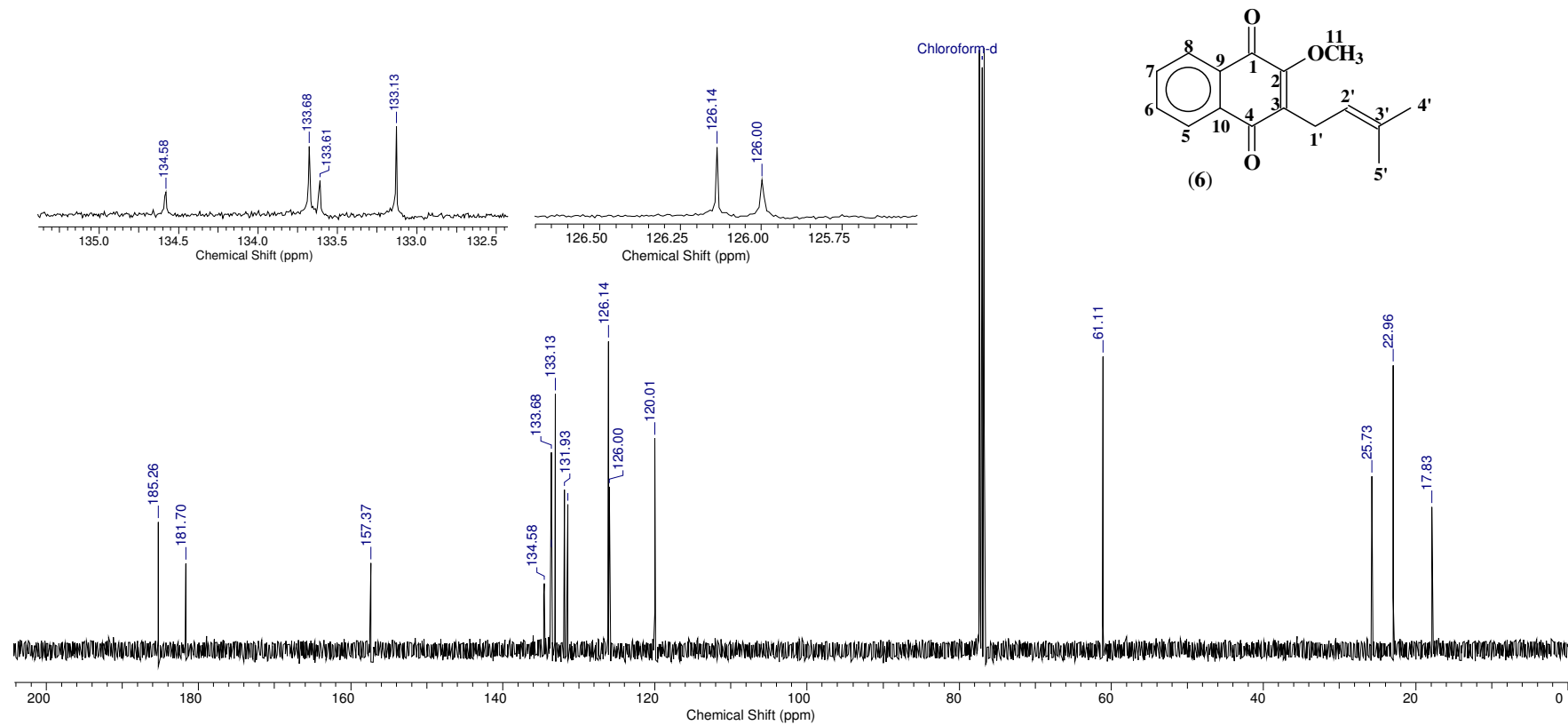
Espectro 9:IV do 2-metóxi-lapachol (6).



Espectro 10: E.M. do 2-metóxi-lapachol (6).



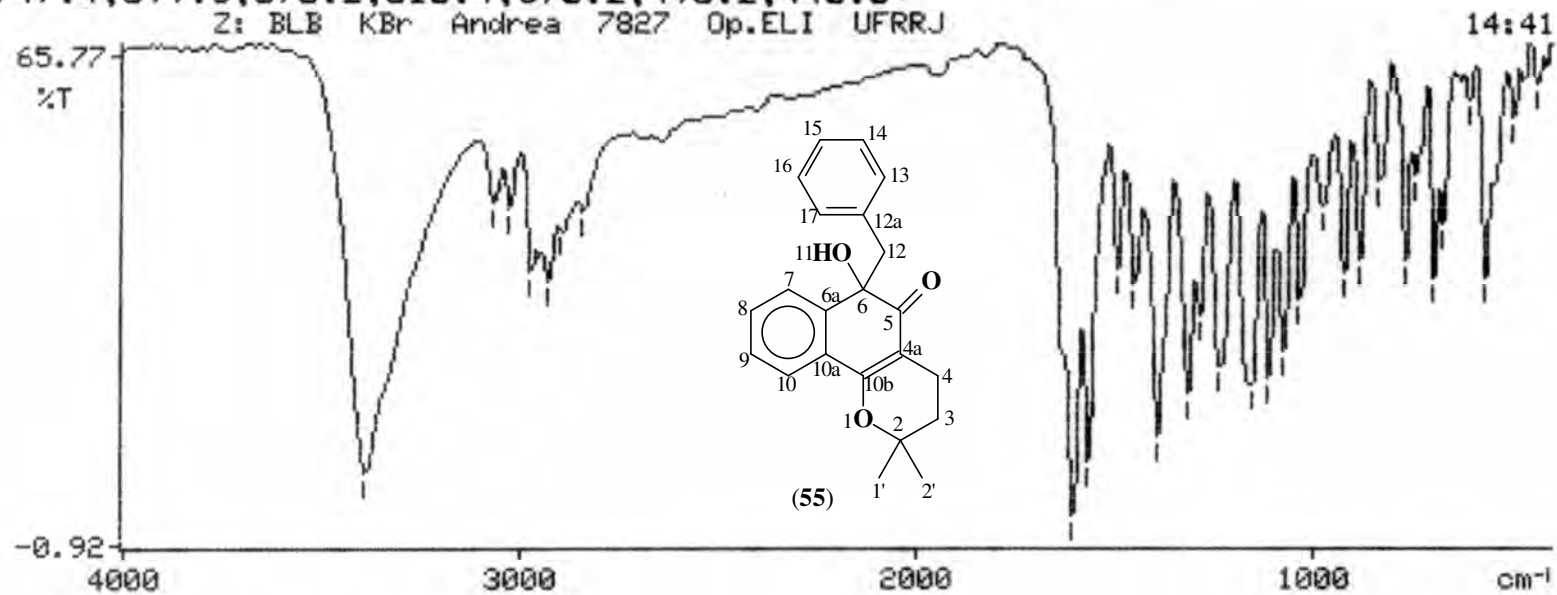
Espectro 11:RMN de ^1H do 2-metóxi-lapachol (6).



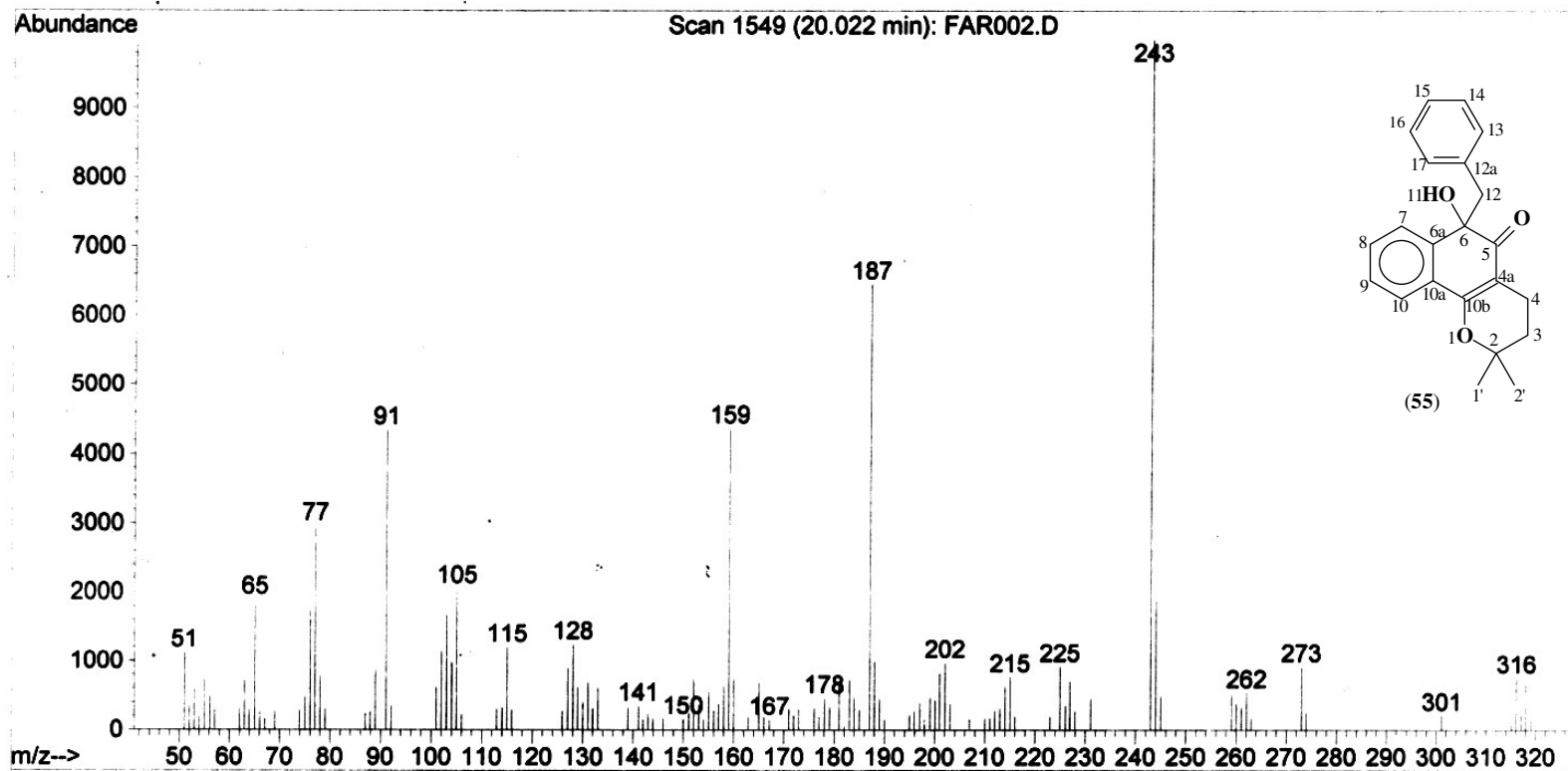
Espectro 12: RMN de ^{13}C do 2-metóxi-lapachol (6).

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1568.2, 1494.8, 1451.8, 1394.4, 1316.6, 1287.3, 1238.7, 1157.2=
1114.0, 1076.5, 1034.9, 978.0, 926.2, 886.1, 836.0, 771.8=
747.4, 699.5, 676.2, 610.4, 570.2, 498.2, 440.0=

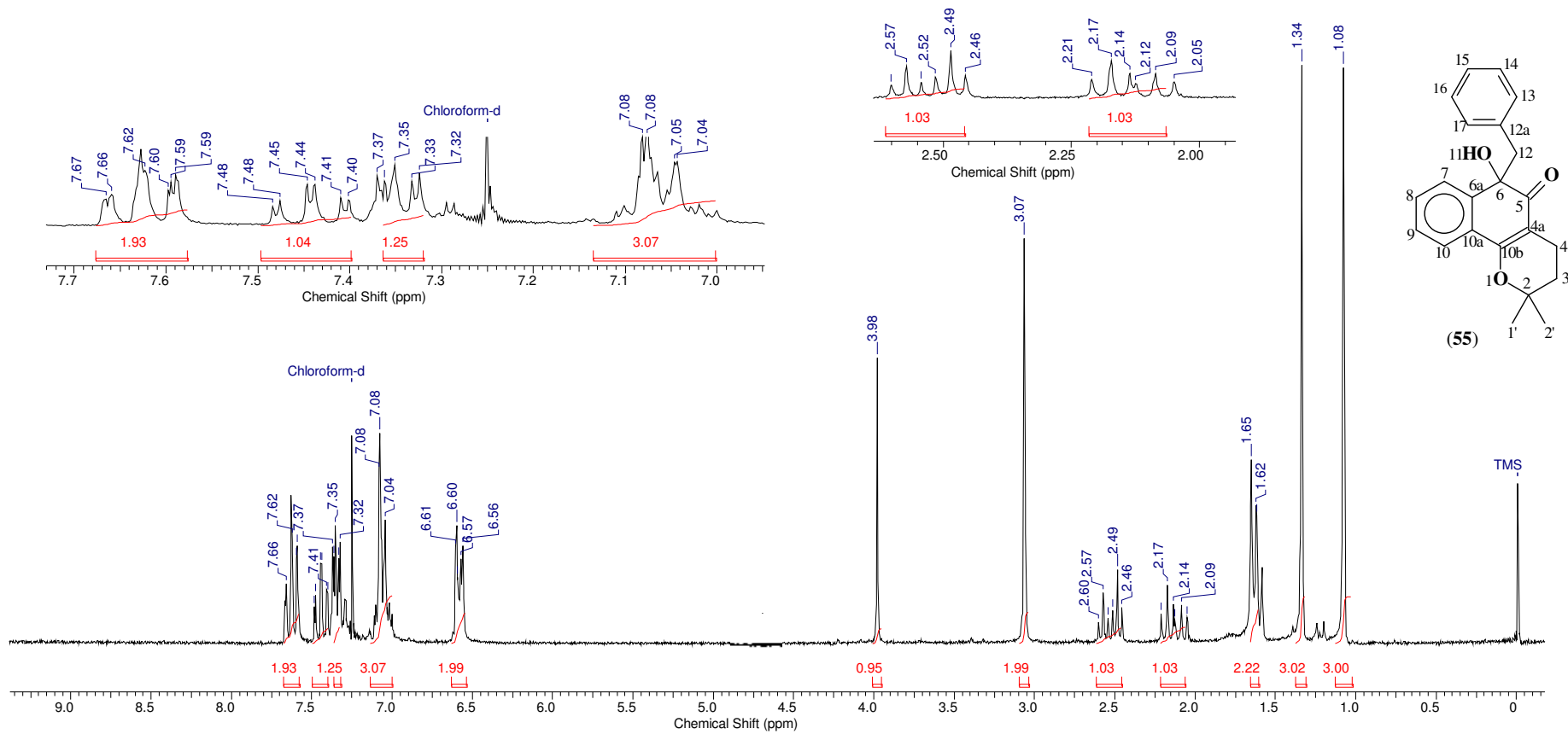
Z: BLB KBr Andrea 7827 Op.ELI UFRRJ



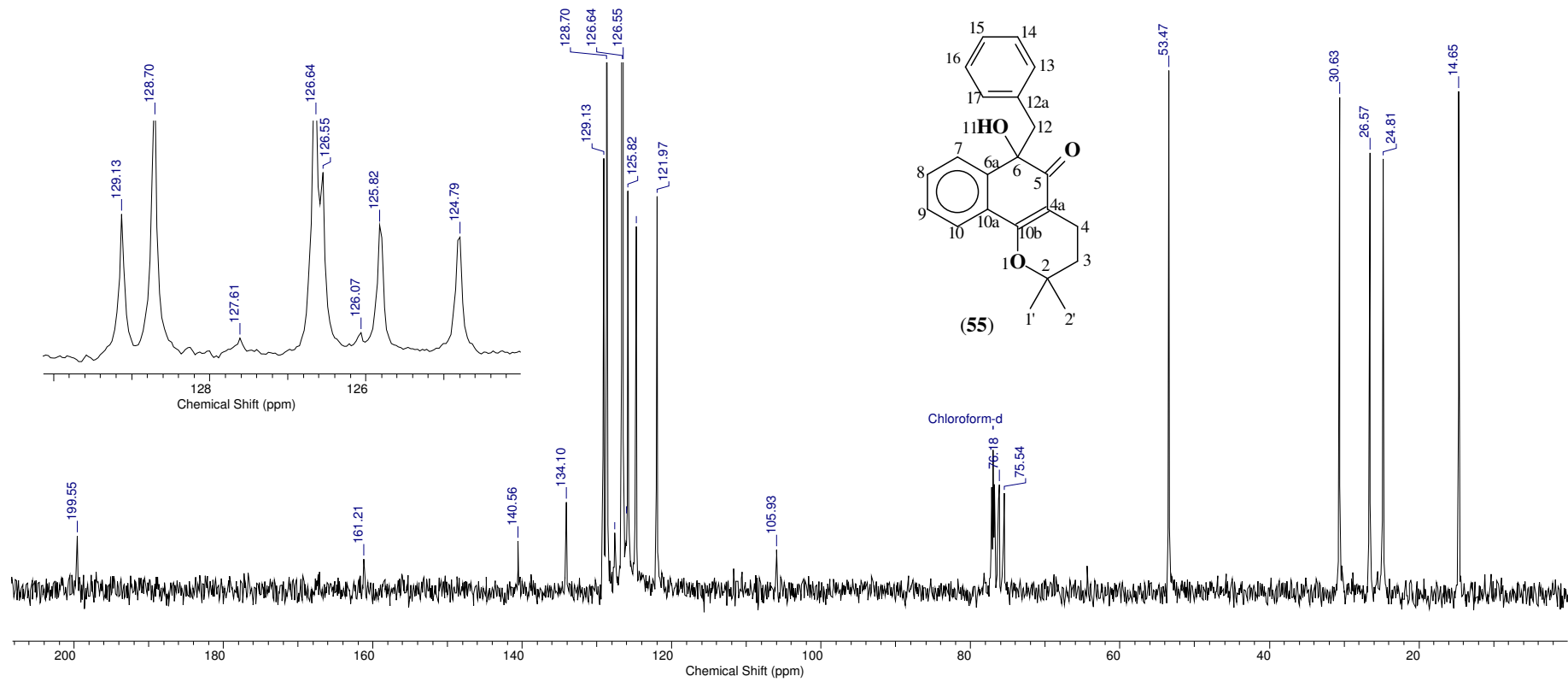
Espectro 13: IV do composto 55.



Espectro 14: E. M. do composto 55.



Espectro 15: RMN de ^1H do composto **55**.



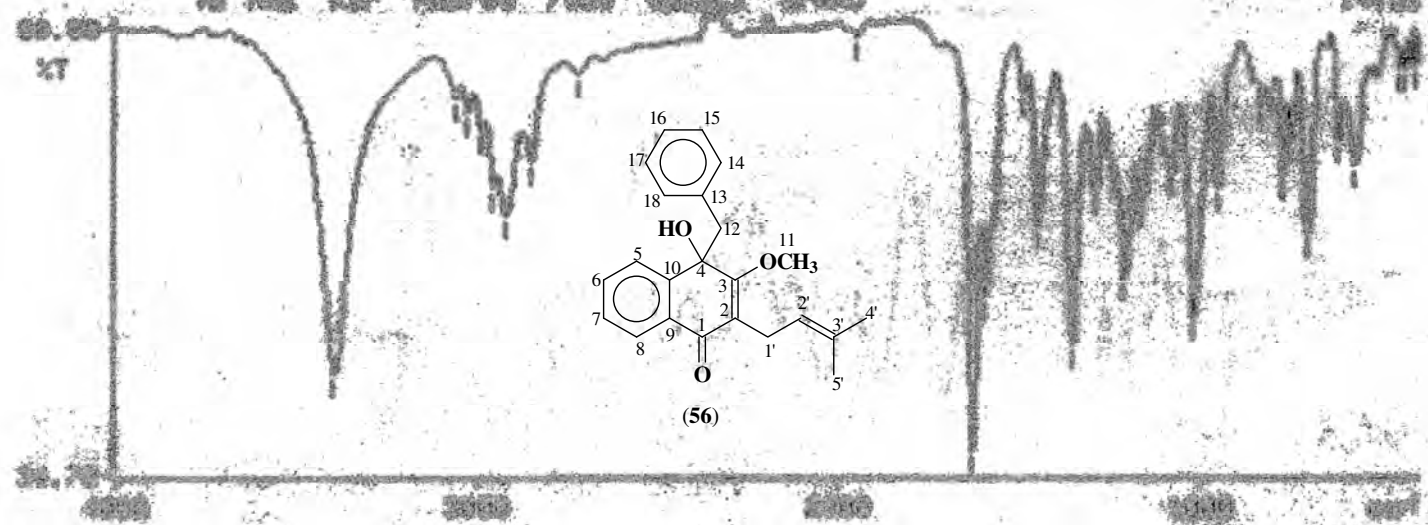
Espectro 16: RMN de ^{13}C do composto **55**.

3396.4, 3063.8, 3031.2, 2993.1, 2958.4, 2925.4, 2854.2, 2724.7=

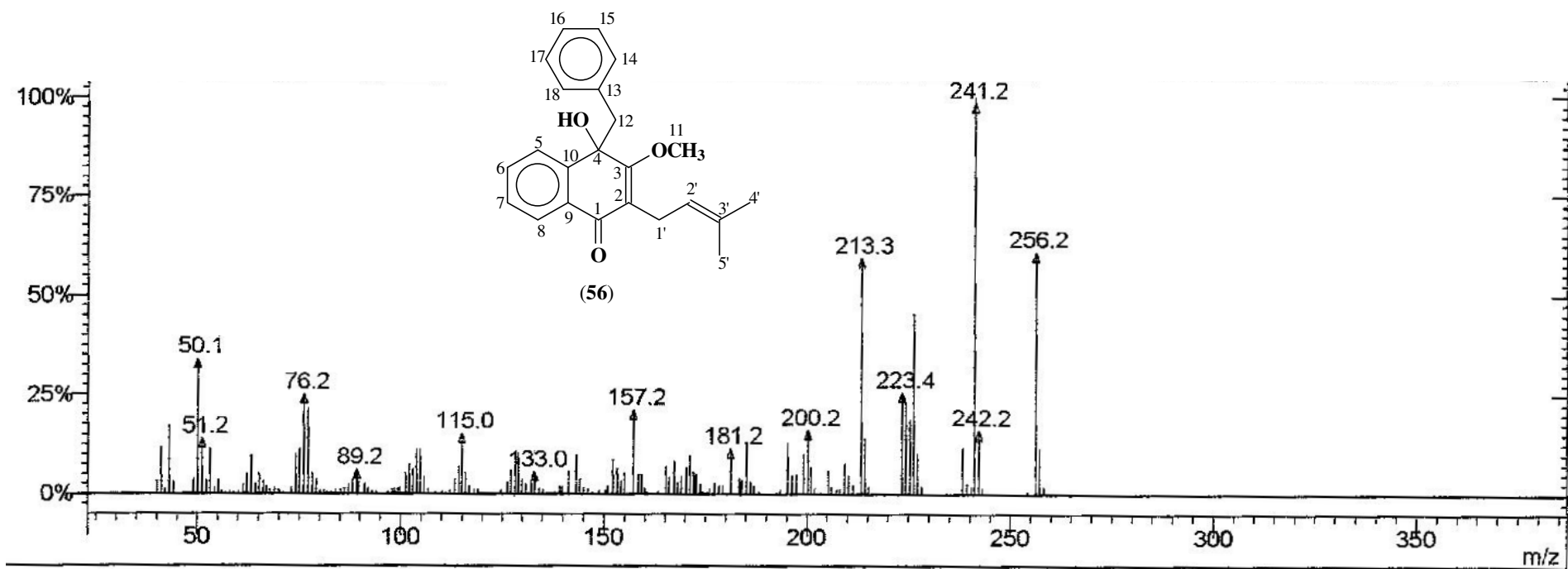
1781.7, 1630.9, 1594.8, 1494.5, 1452.7, 1357.3, 1294.8, 1213.4=

1165.8, 1093.9, 1022.7, 904.4, 839.3, 809.7, 777.8, 761.3=

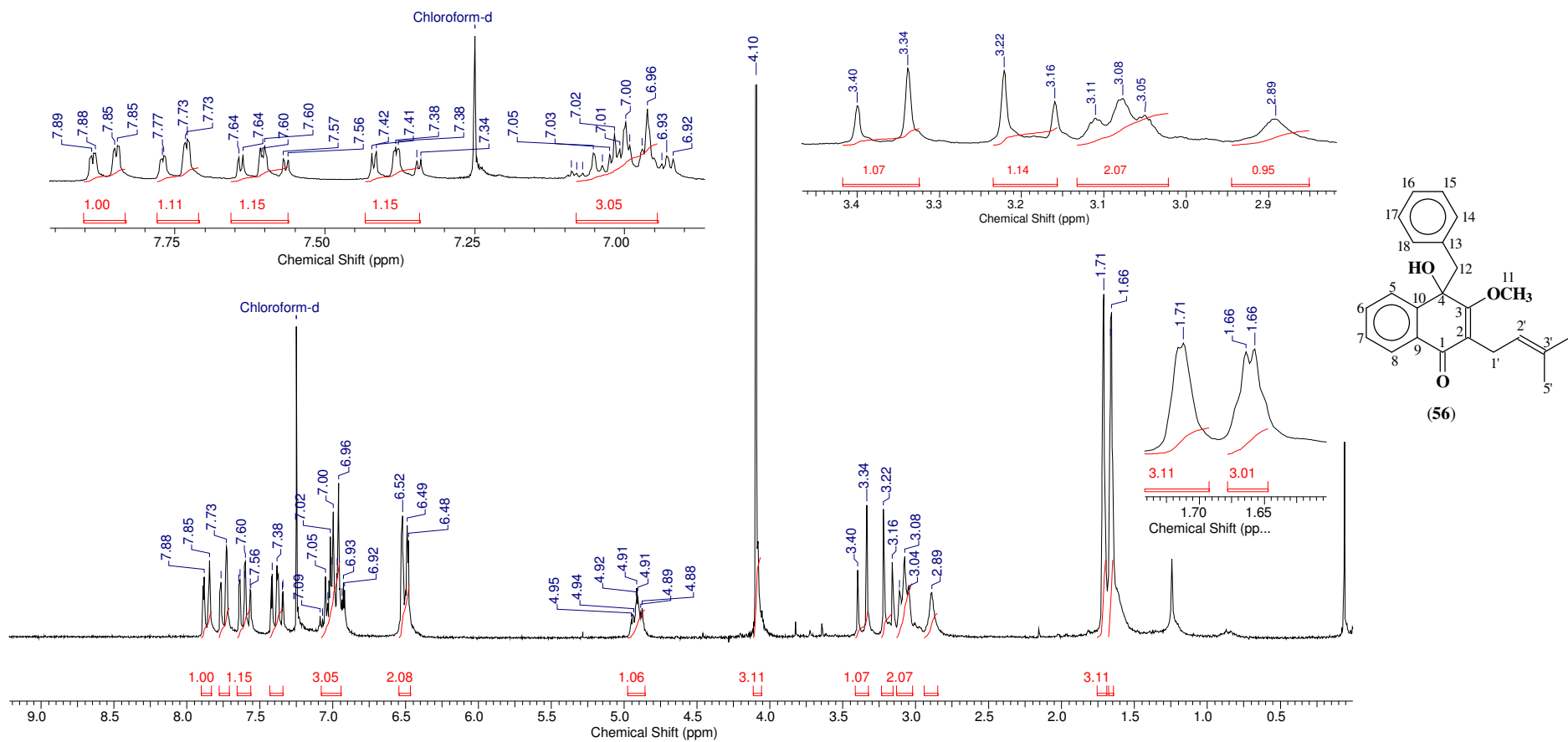
704.8, 662.3, 617.9, 556.1, 494.2, 452.5=



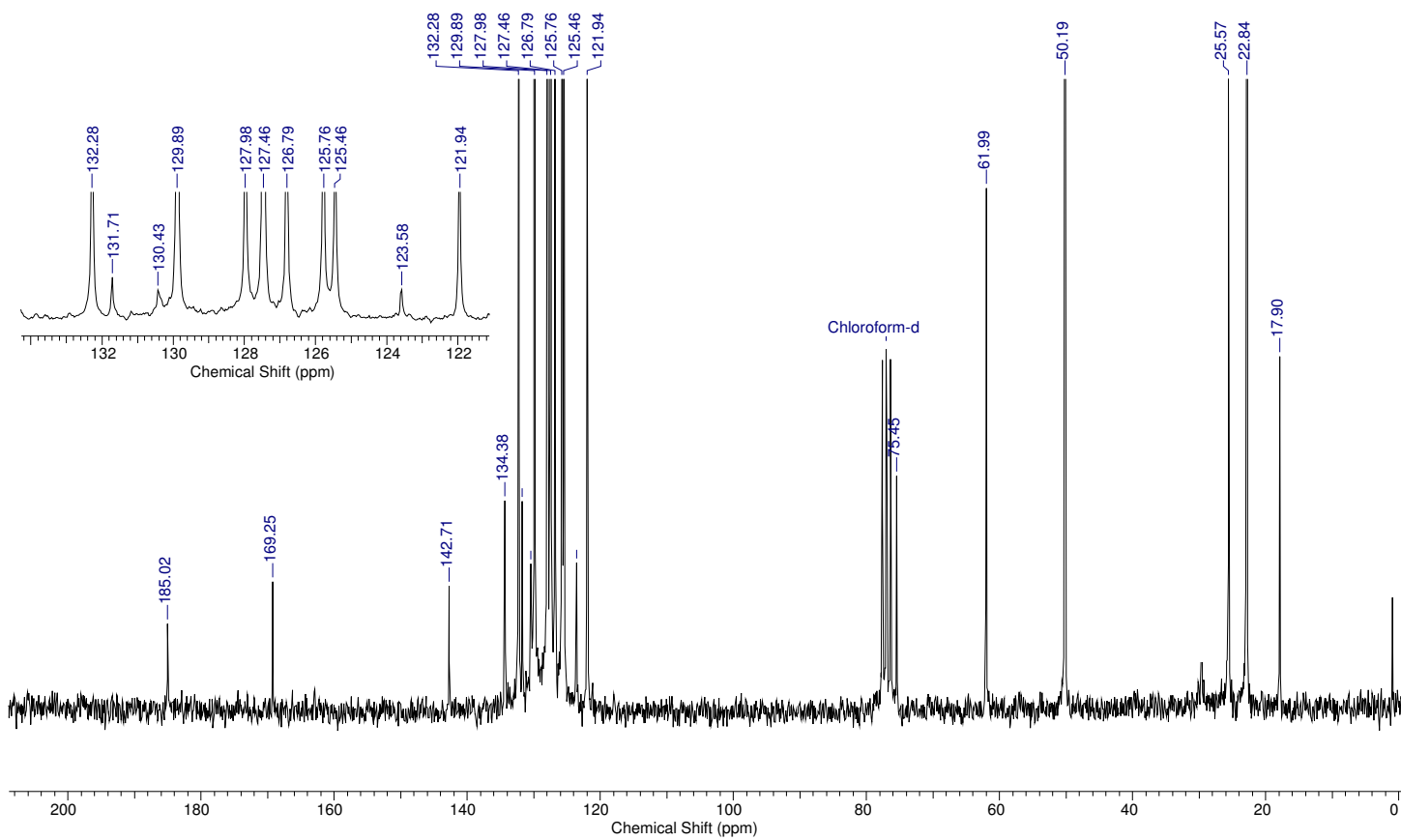
Espectro 17: IV do composto 56.



Espectro 18: E.M. do composto 56.



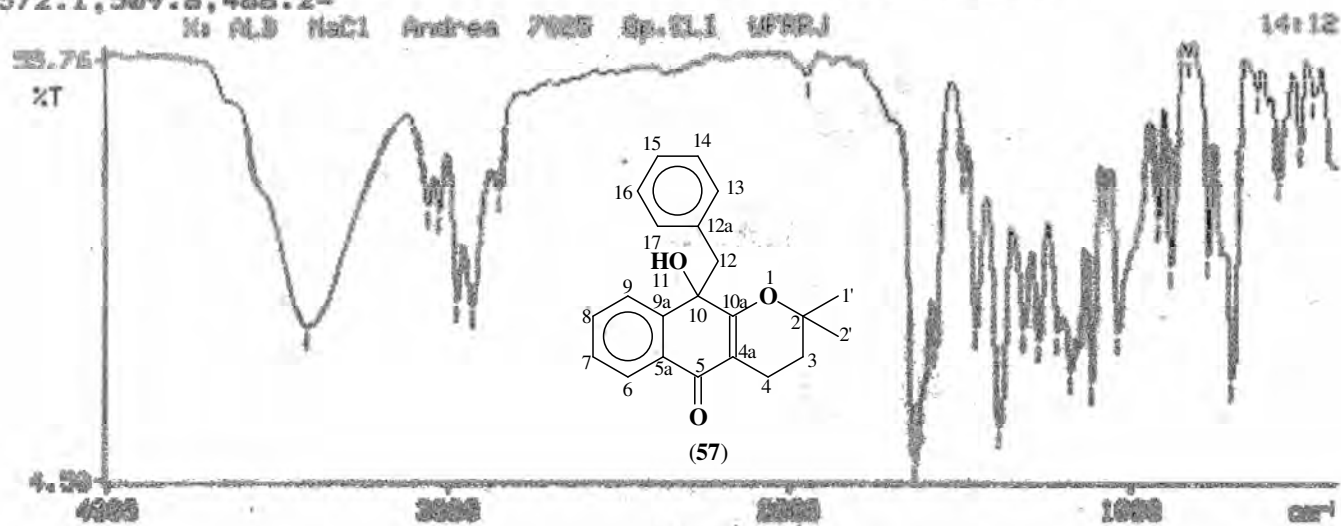
Espectro 19: RMN de ^1H do composto **56**.



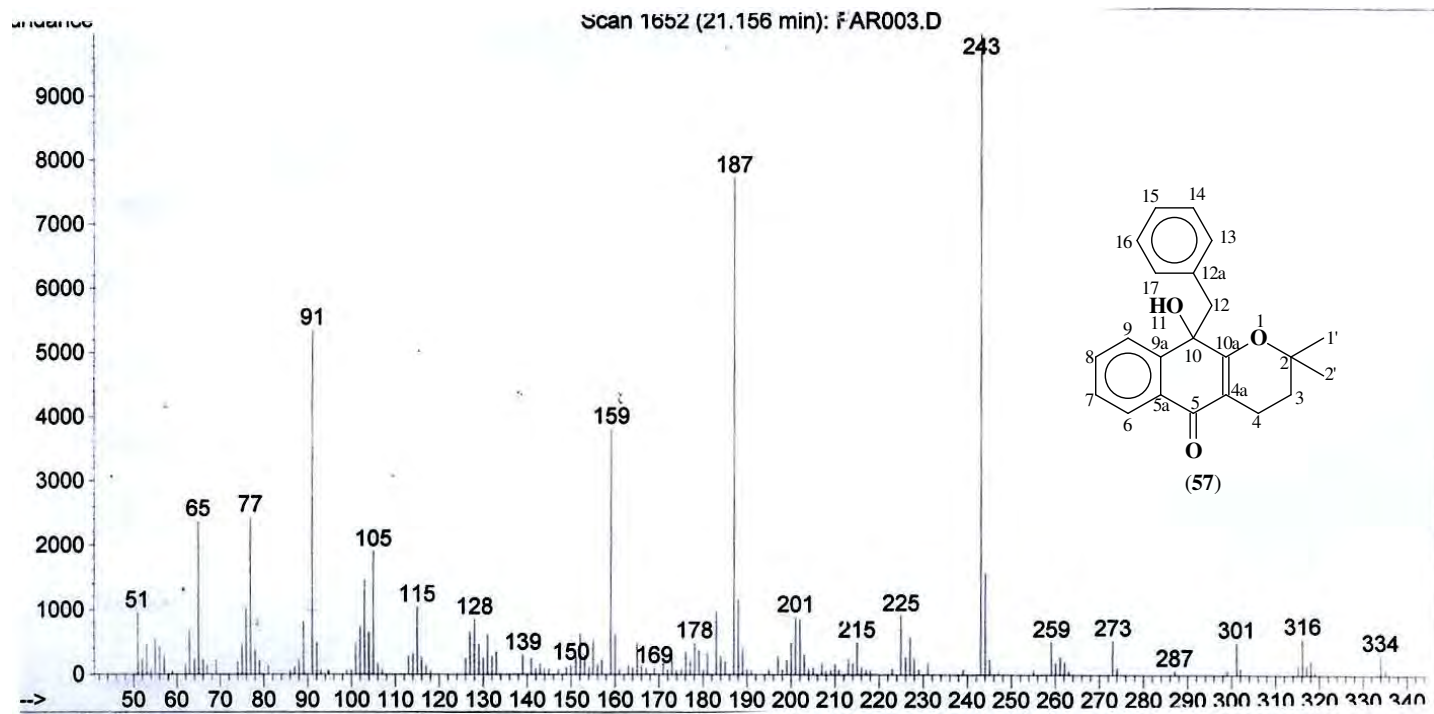
Espectro 20: RMN de ^{13}C do composto **56**.

3412.6, 3064.1, 3031.6, 2977.8, 2933.4, 2857.1, 1949.7, 1632.0=
1573.1, 1494.4, 1455.9, 1387.5, 1314.3, 1271.1, 1213.8, 1176.2=
1115.8, 1076.4, 1038.2, 924.2, 886.4, 831.4, 776.1, 705.3, 633.2=
572.1, 509.6, 466.2=

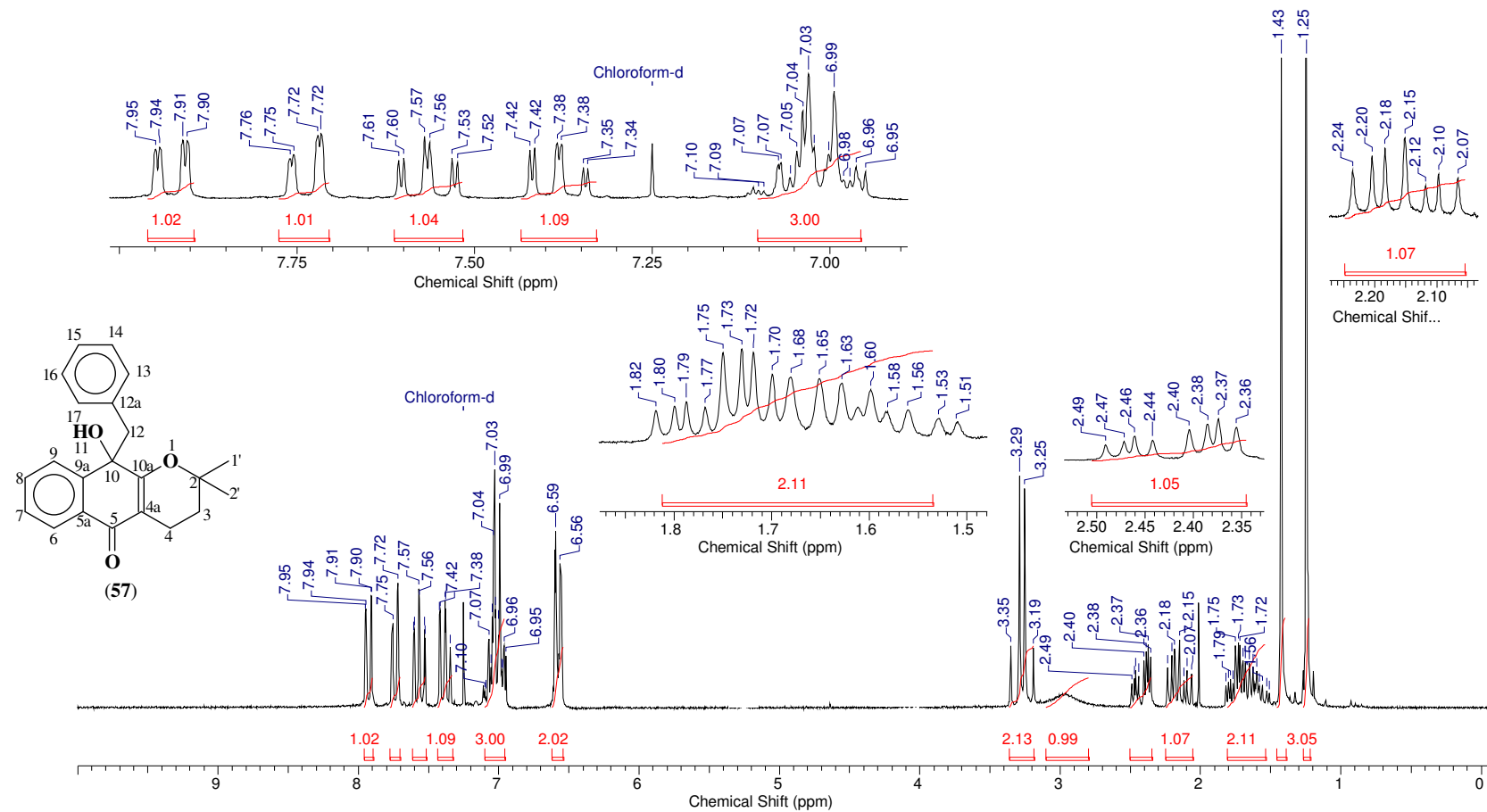
Na ALD NaCl Andrea 7025 Sp.GLI IFFRRJ



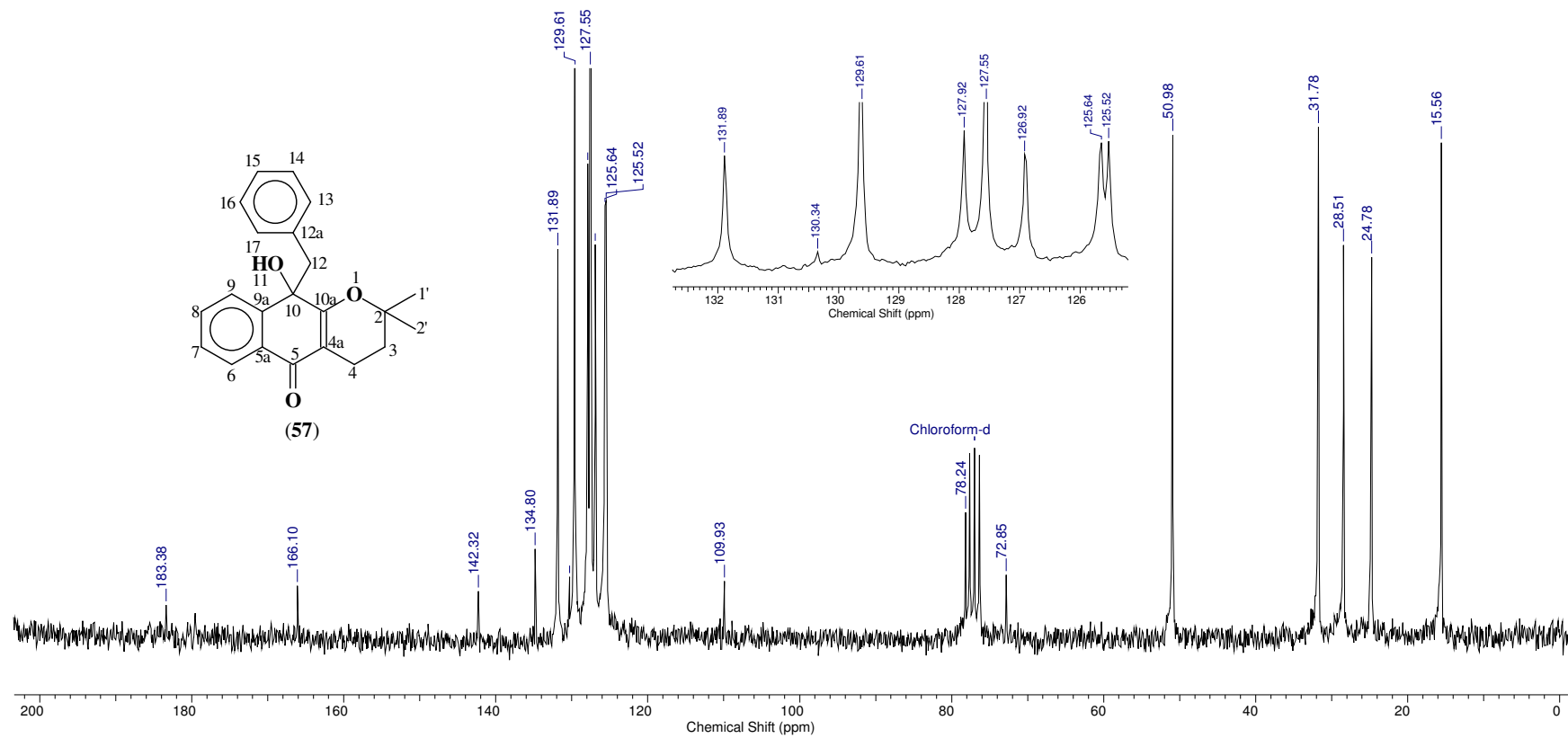
Espectro 21: IV do composto 57.



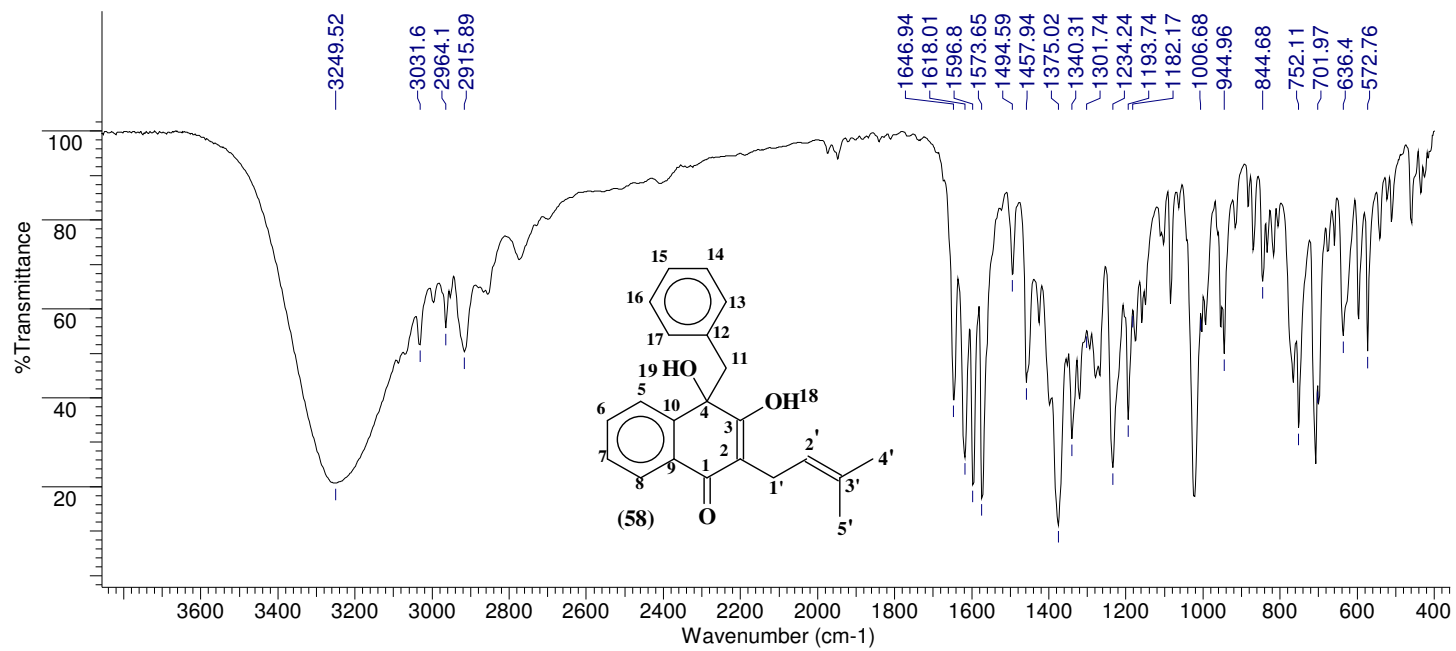
Espectro 22: E.M. do composto **57**.



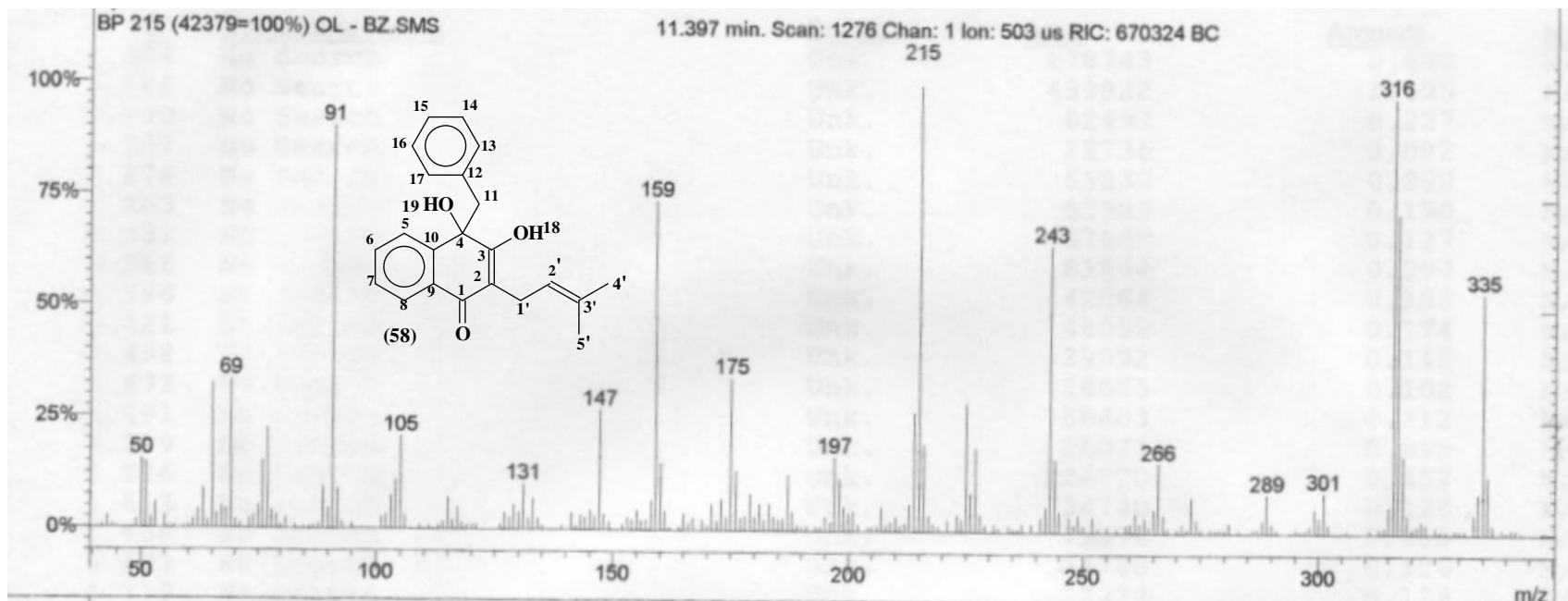
Espectro 23: RMN de ^1H do composto **57**.



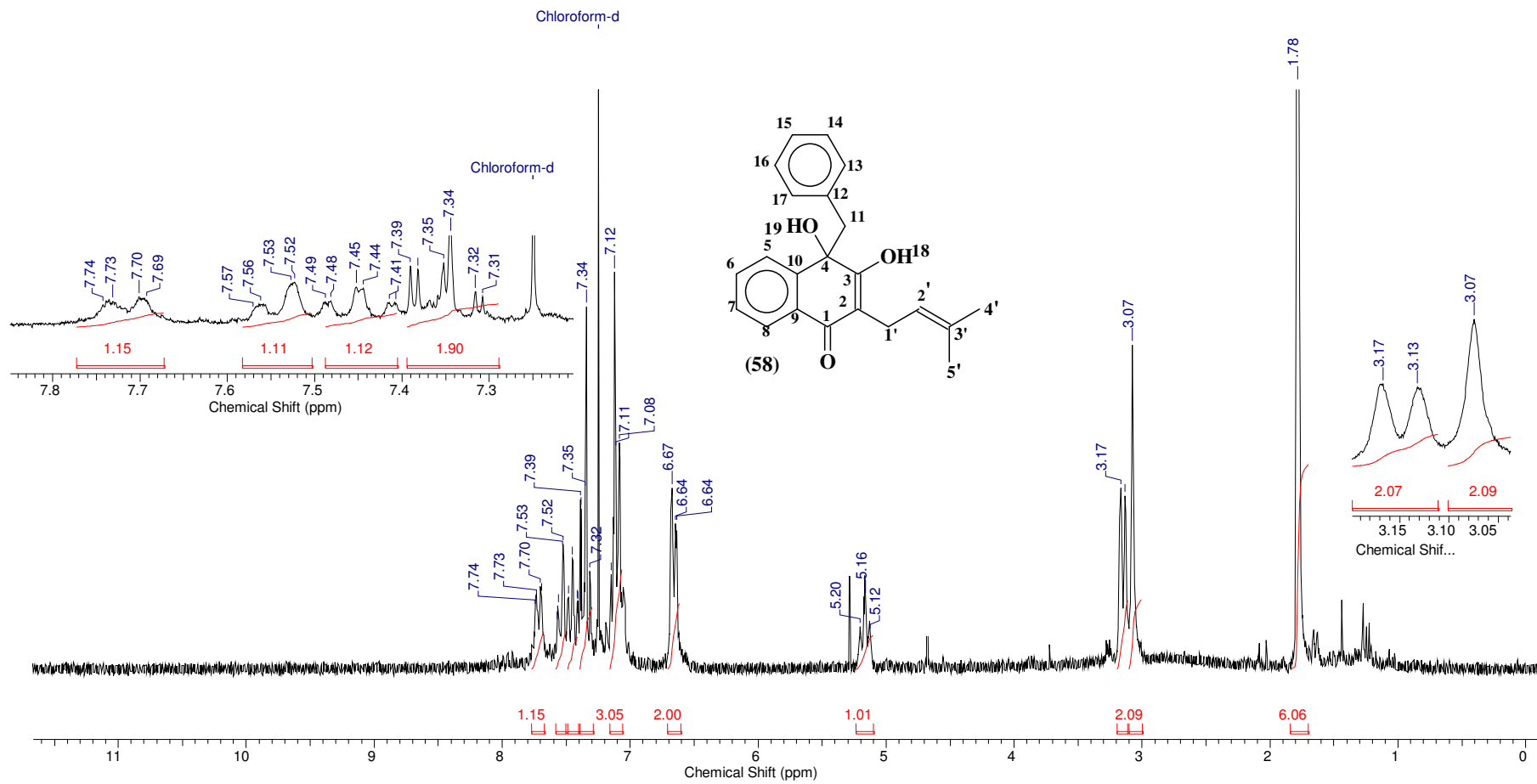
Espectro 24: RMN de ^{13}C do composto **57**.



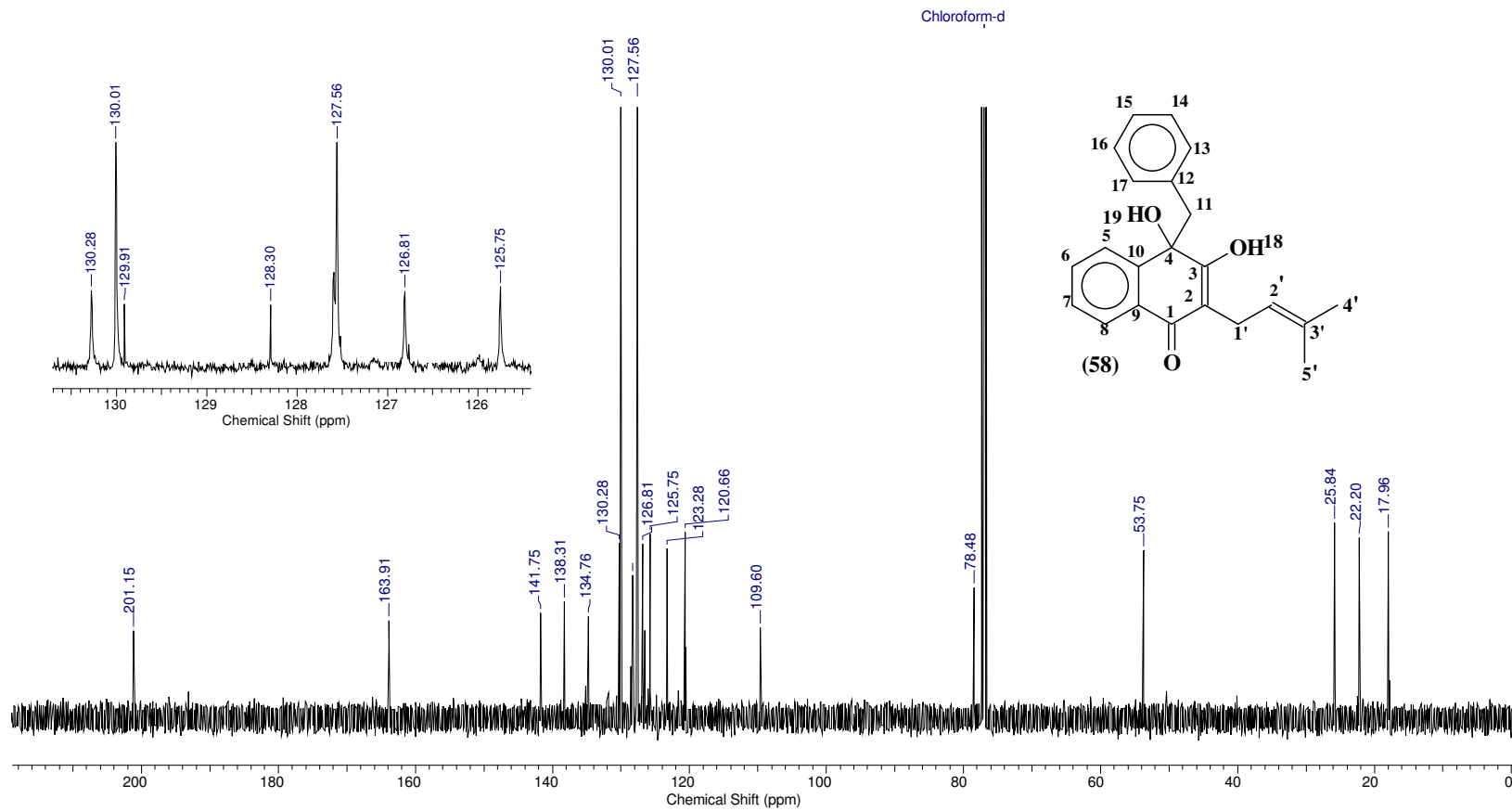
Espectro 25: IV do composto **58**.



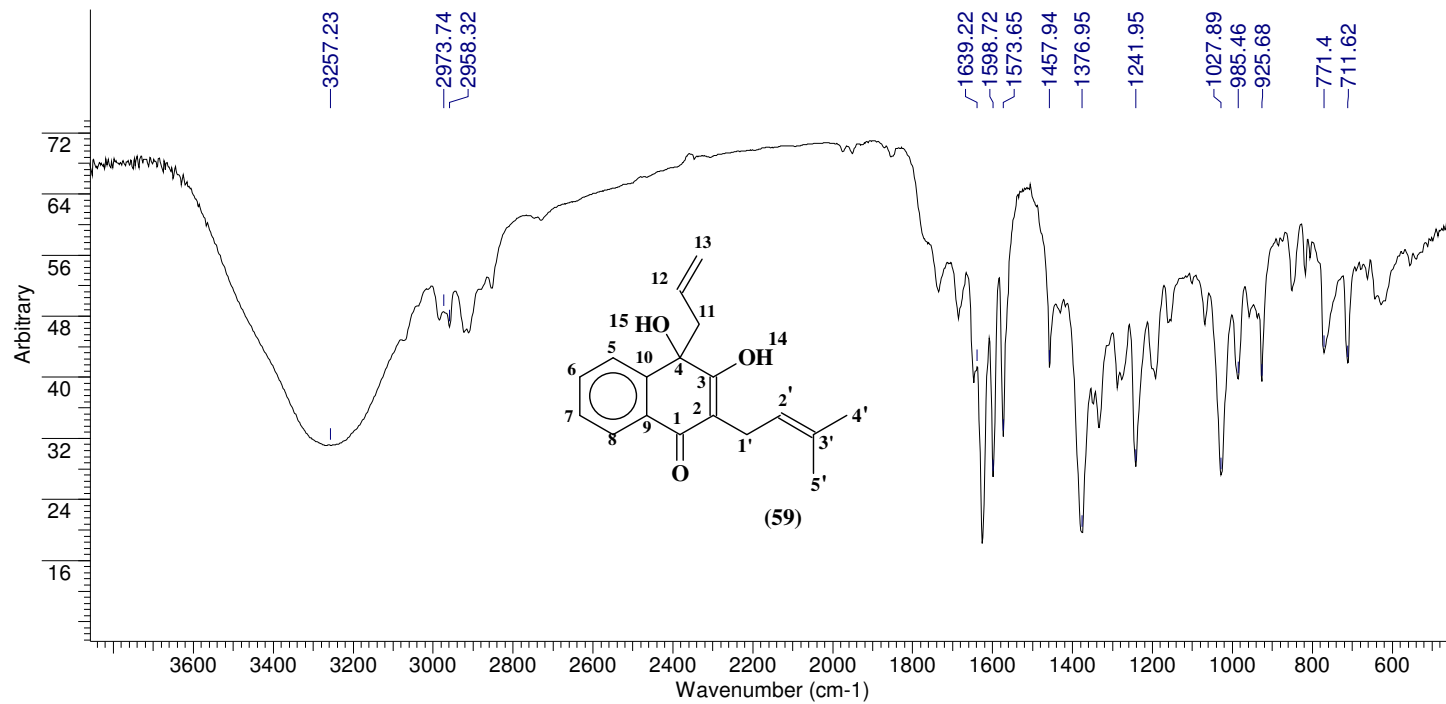
Espectro 26: E.M. do composto **58**.



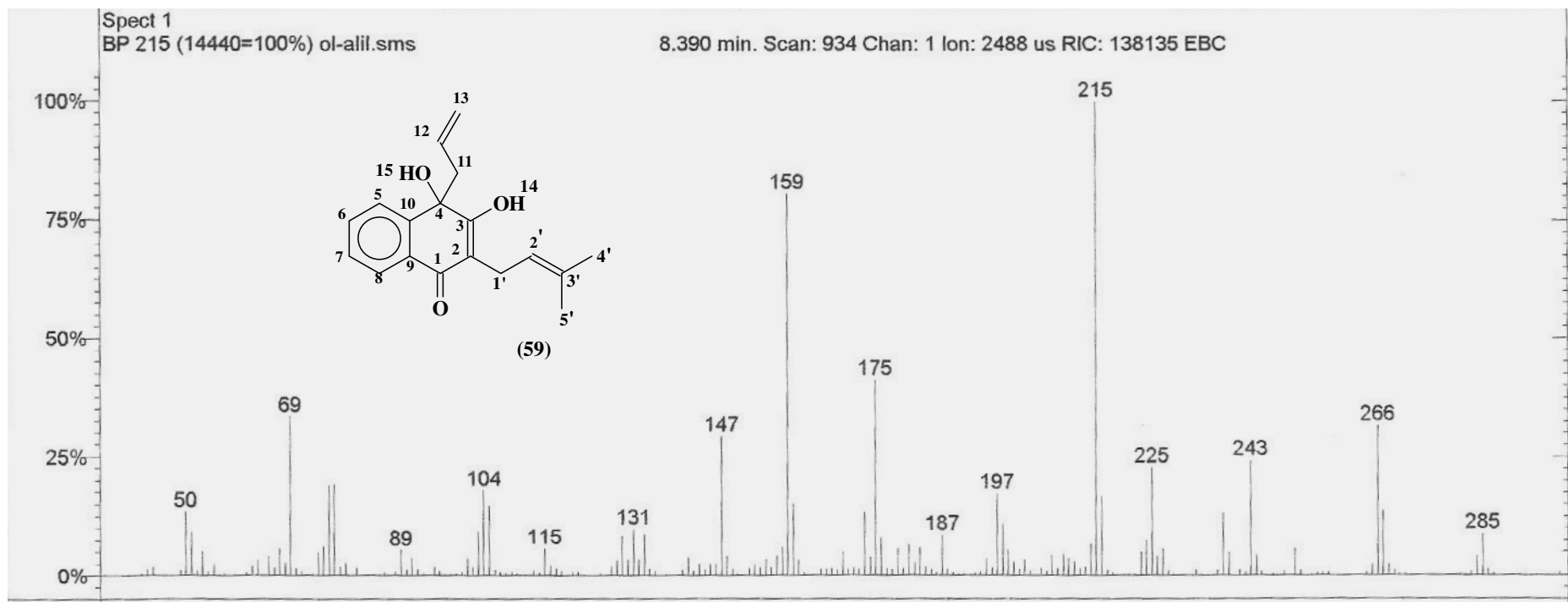
Espectro 27: RMN de ^1H do composto **58**.



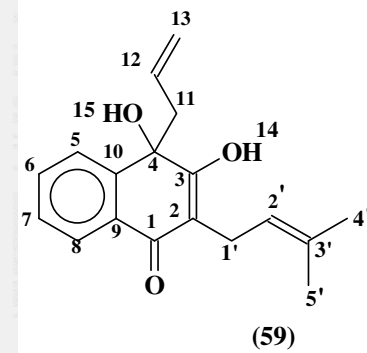
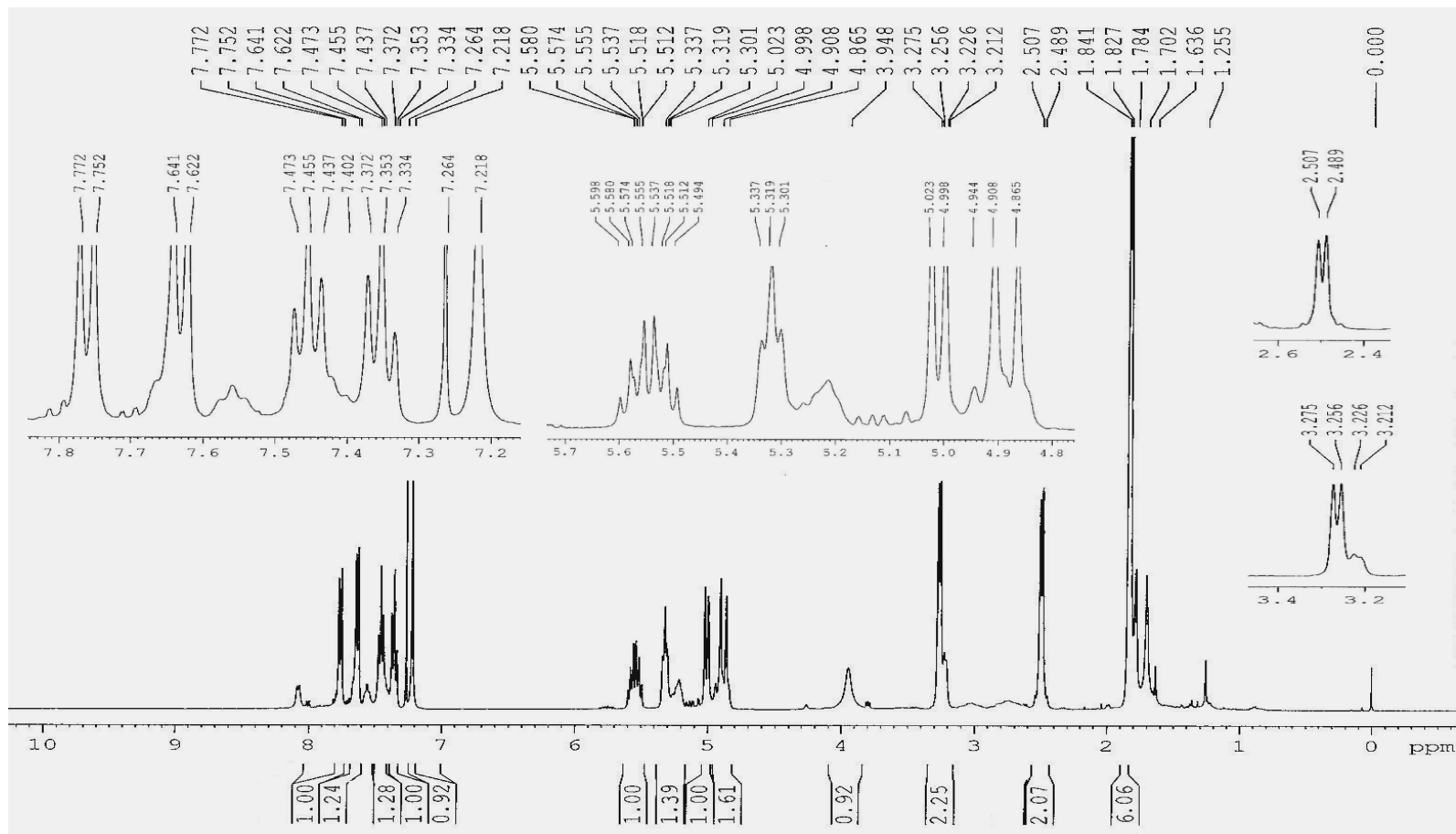
Espectro 28: RMN de ^{13}C do composto **58**.



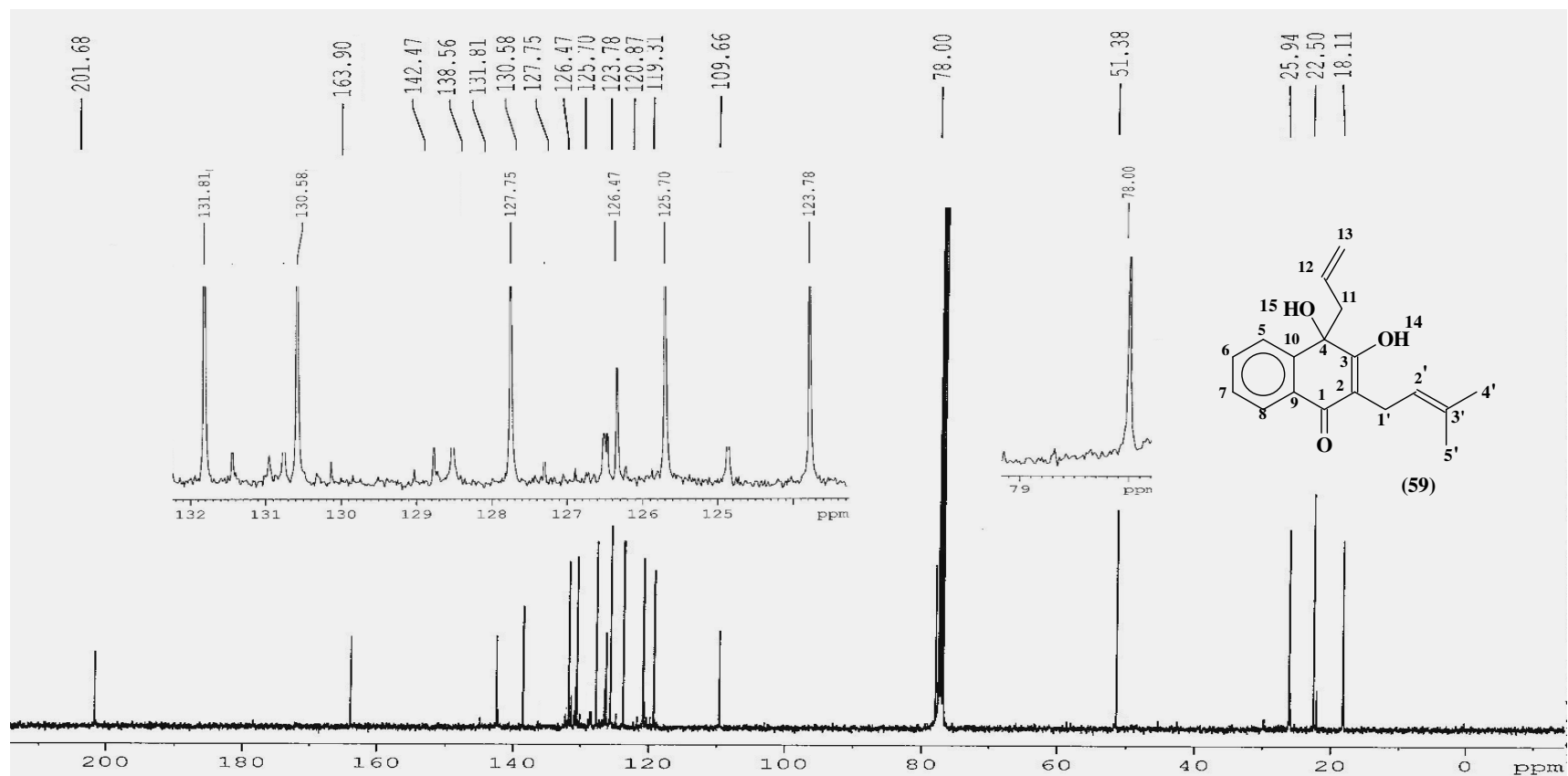
Espectro 29: IV do composto **59**.



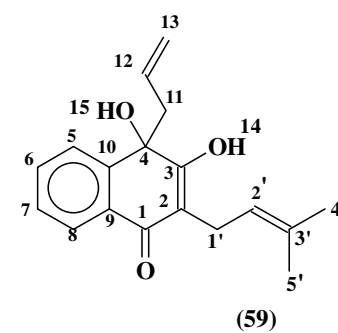
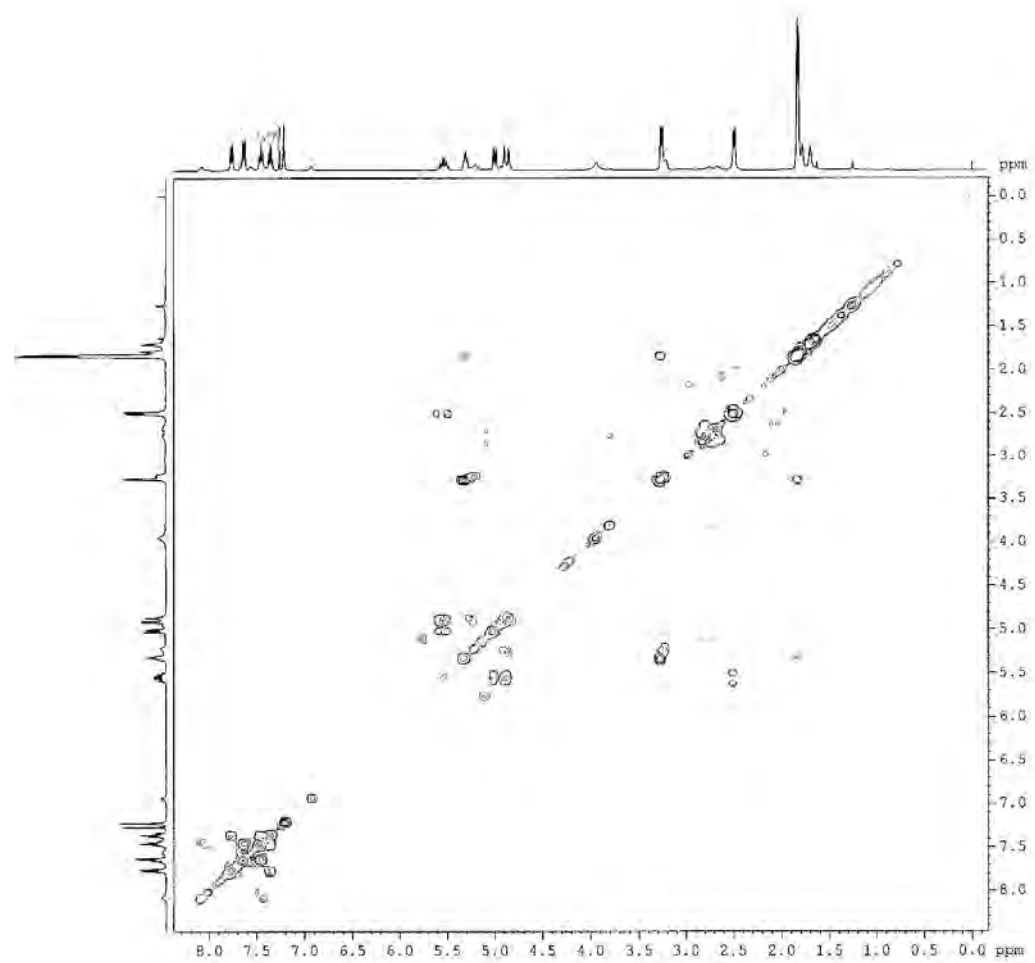
Espectro 30: E.M. do composto **59**.



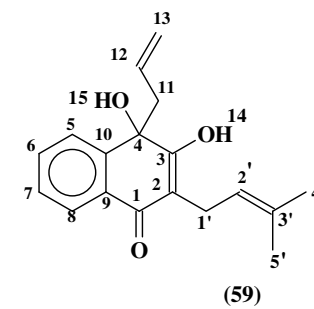
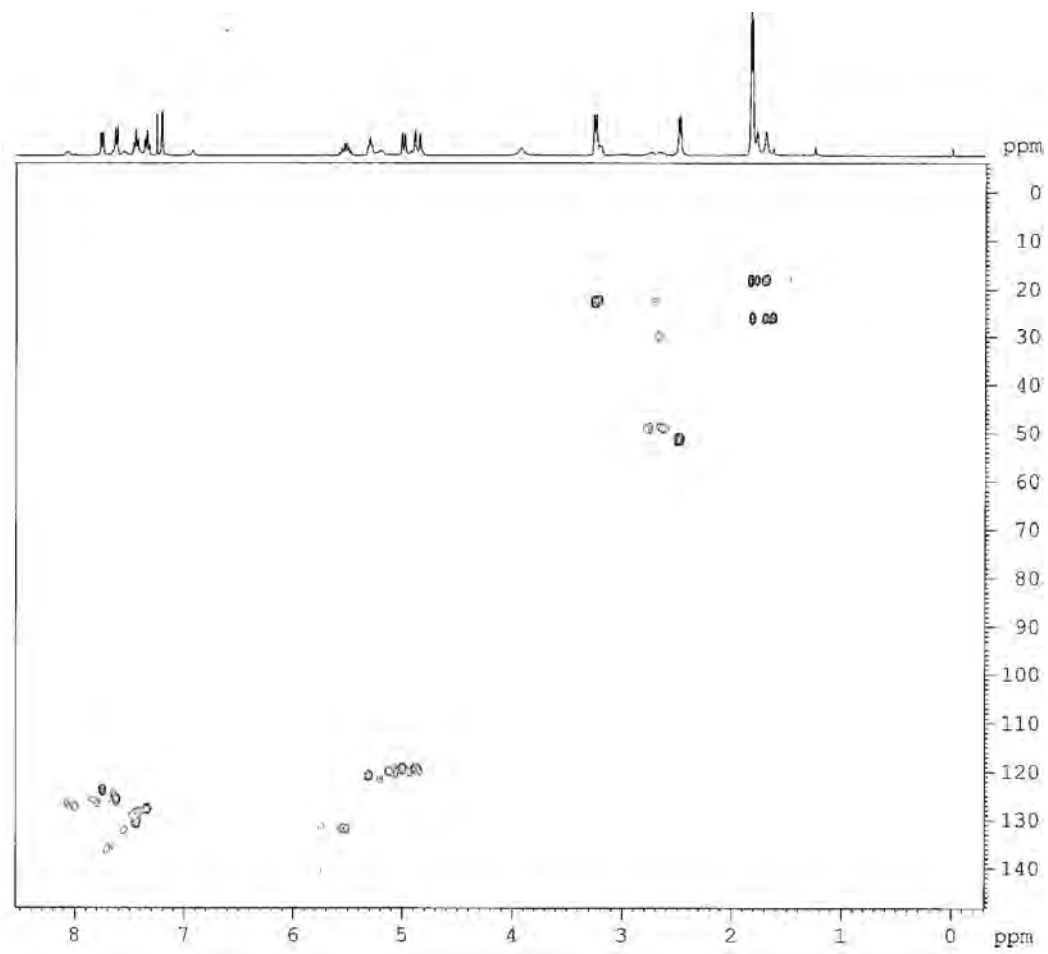
Espectro 31: RMN de ^1H do composto **59**.



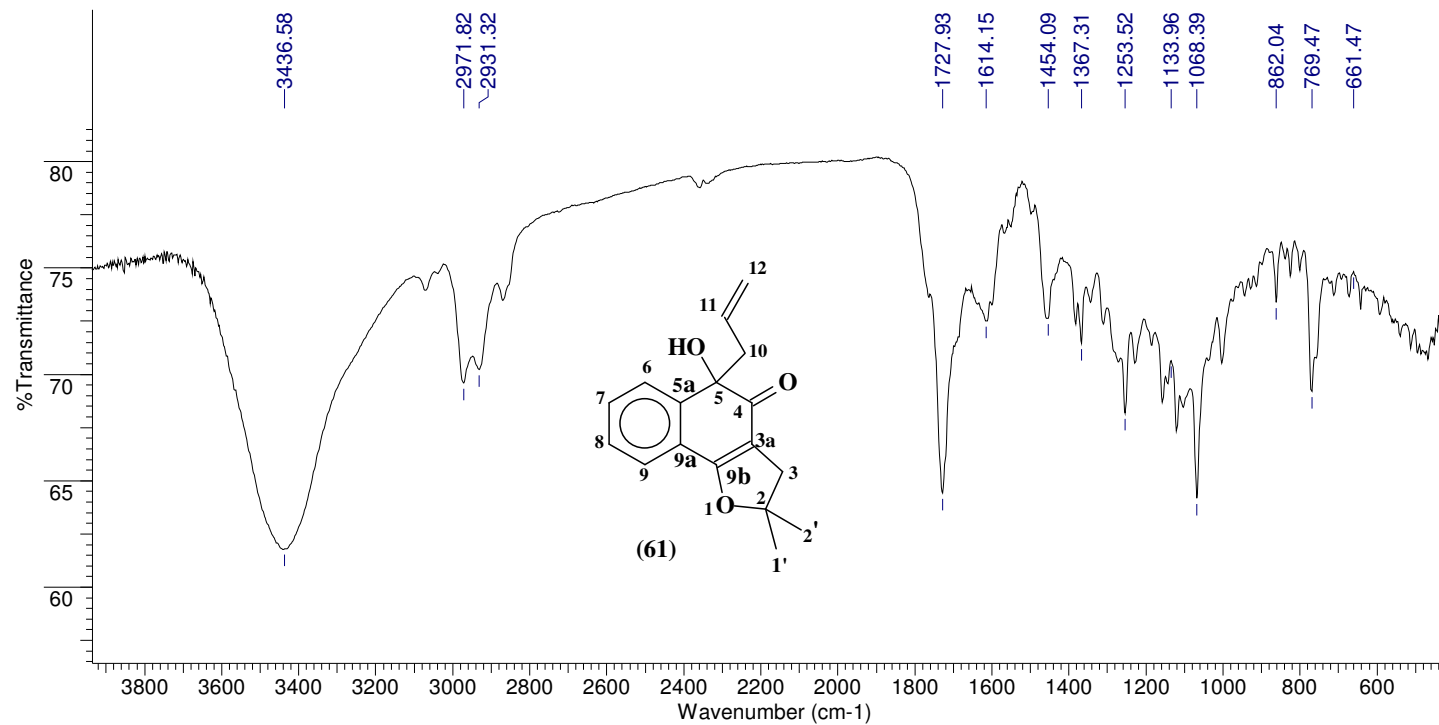
Espectro 32: RMN de ^{13}C do composto **59**.



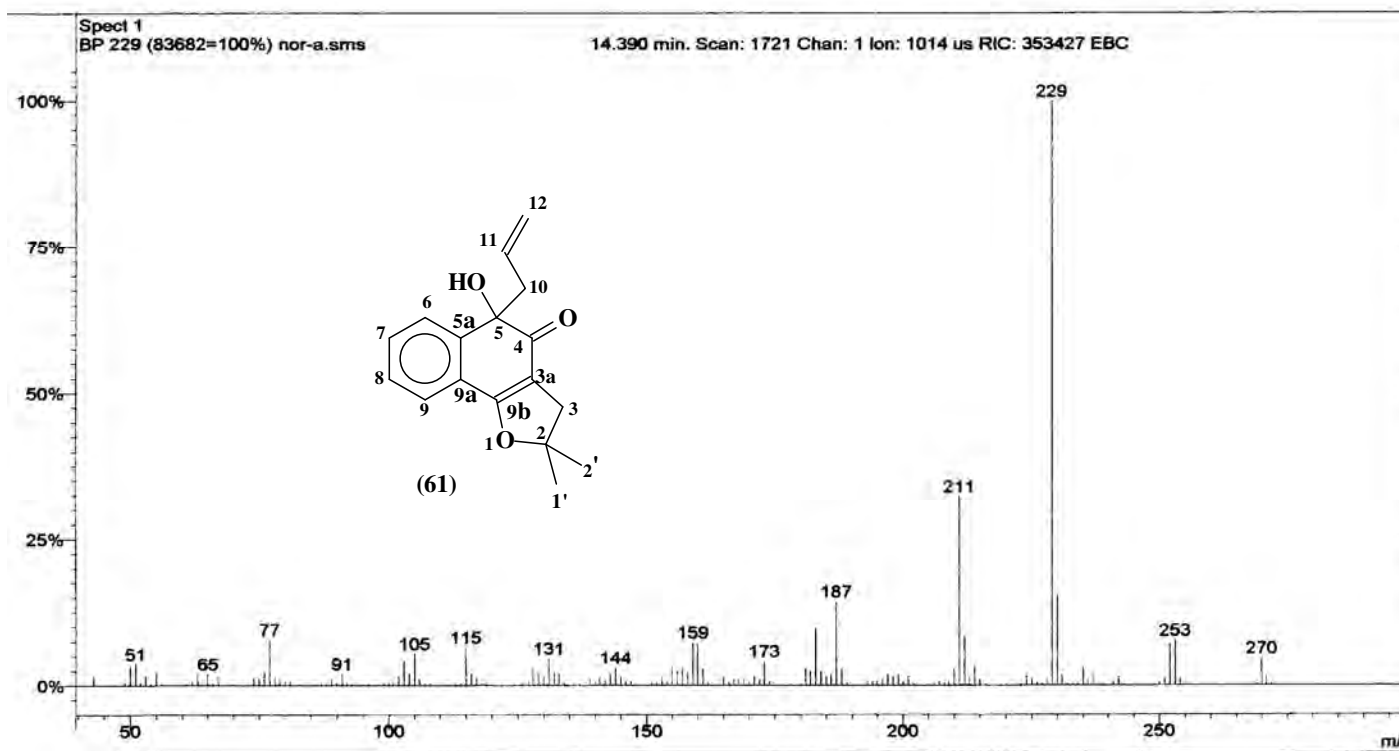
Espectro 33: RMN de H x H COSY do composto **59**.



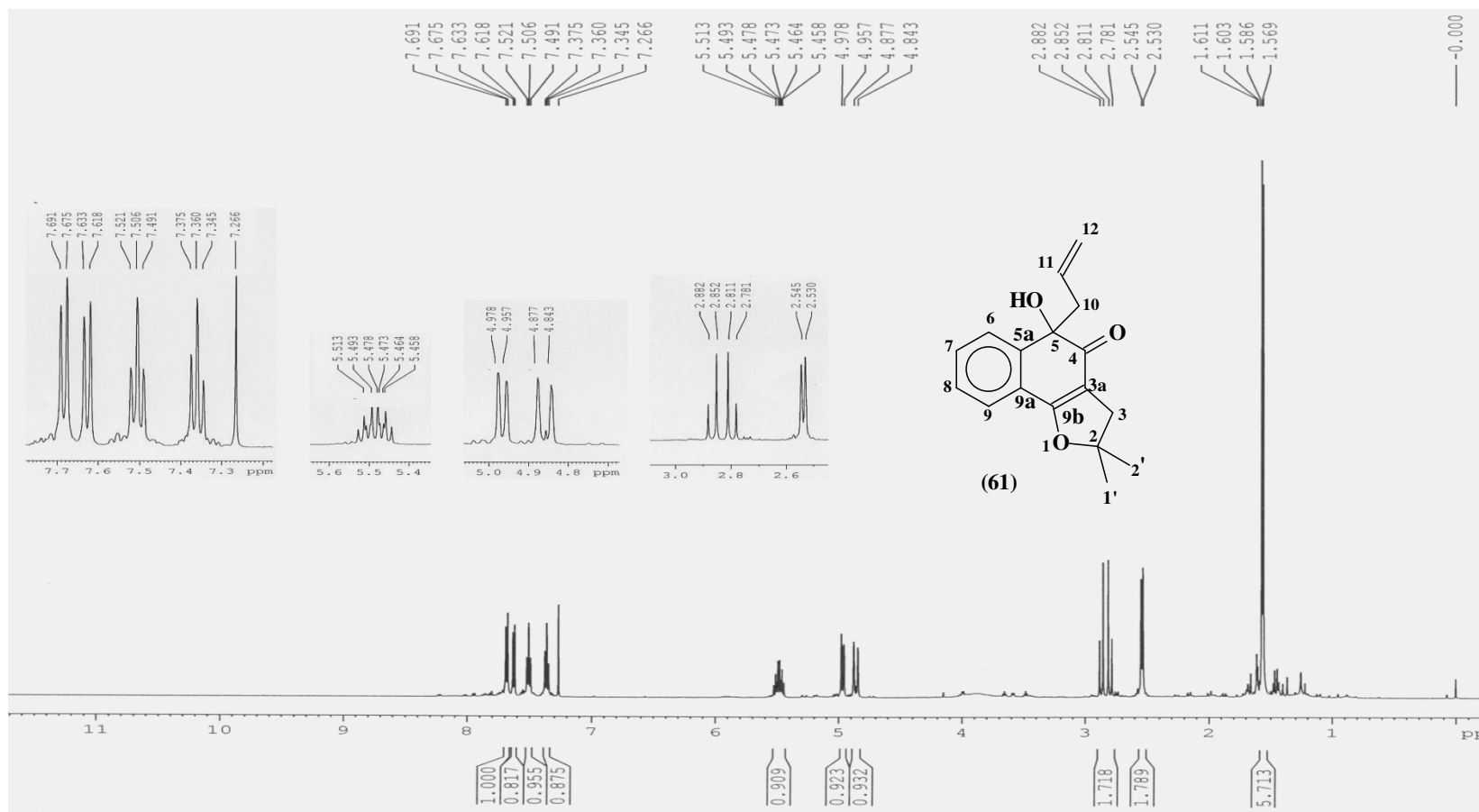
Espectro 34: RMN de HET-COSY (J^2 e J^3) do composto **59**.



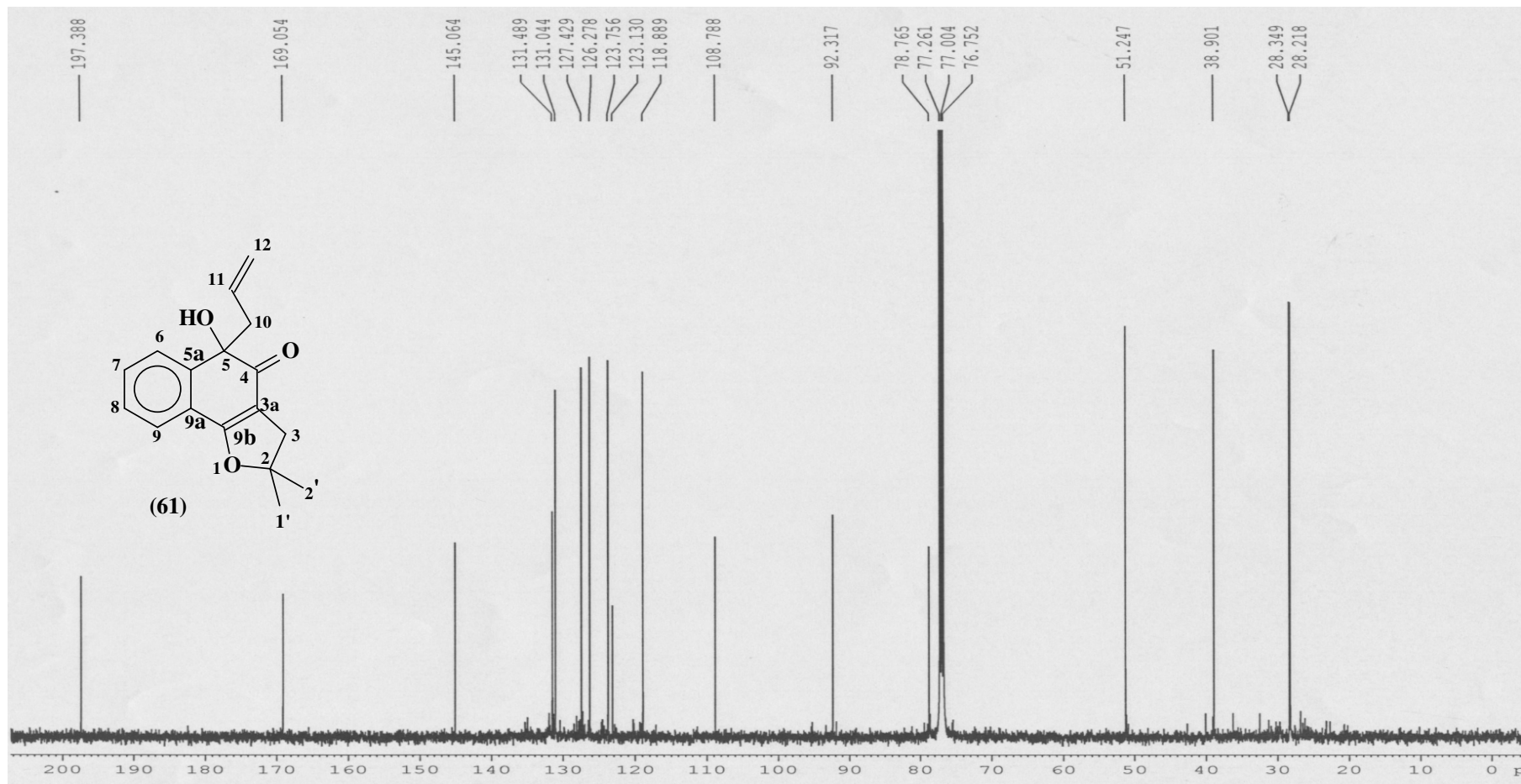
Espectro 35: IV do composto 61.



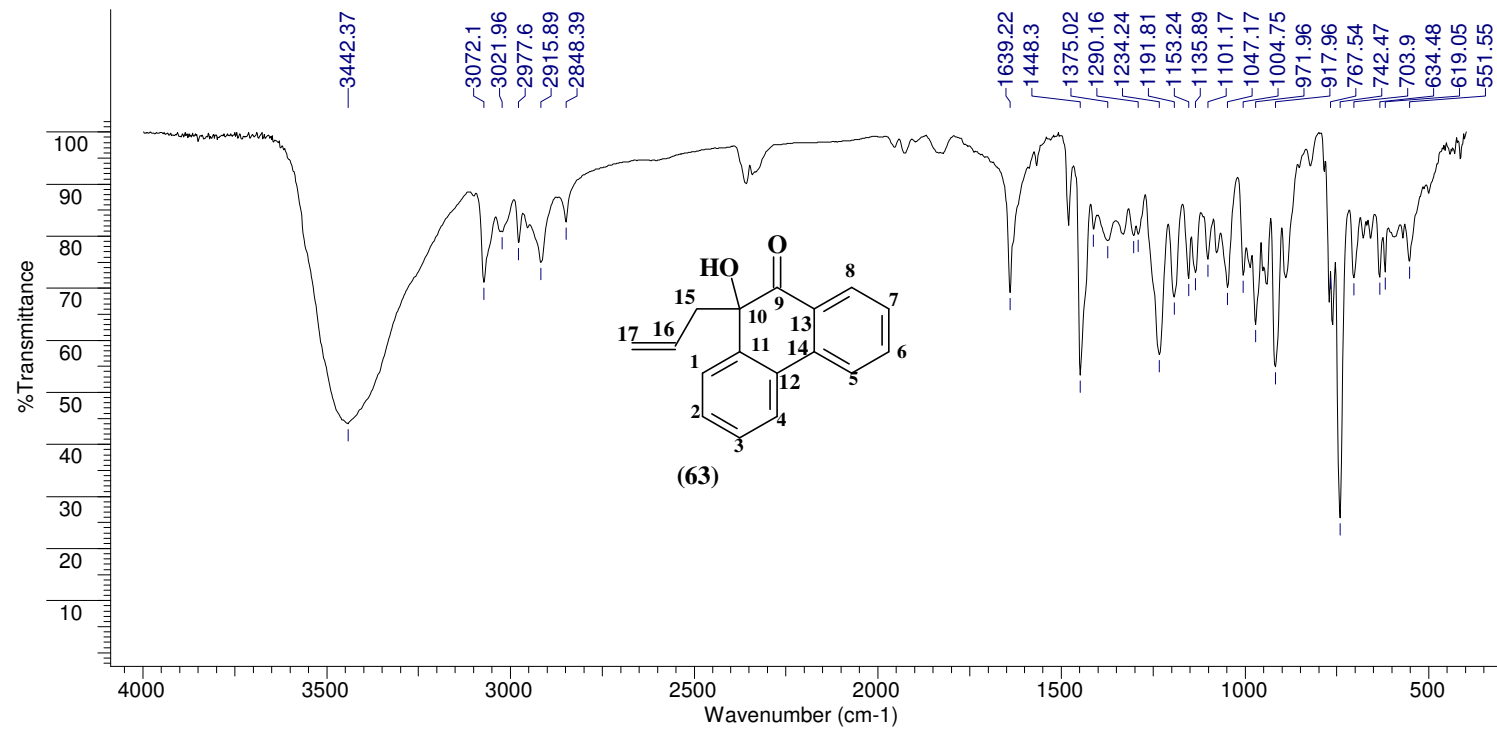
Espectro 36: E.M. do composto **61**.



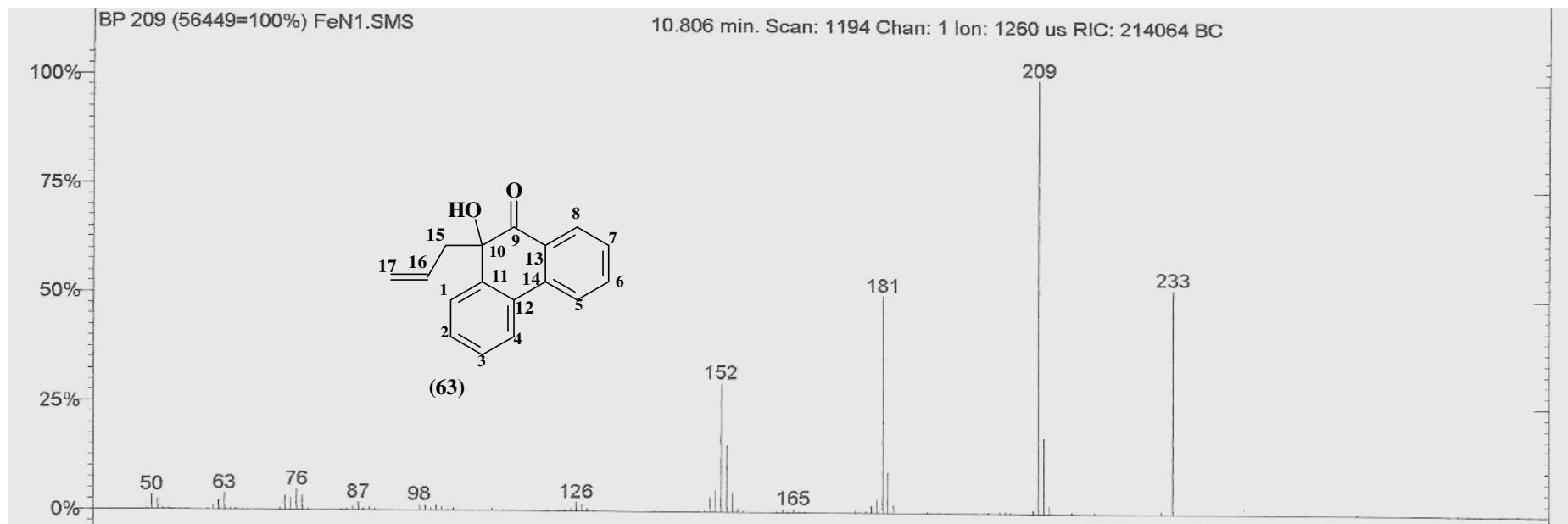
Espectro 37: RMN de ^1H do composto **61**.



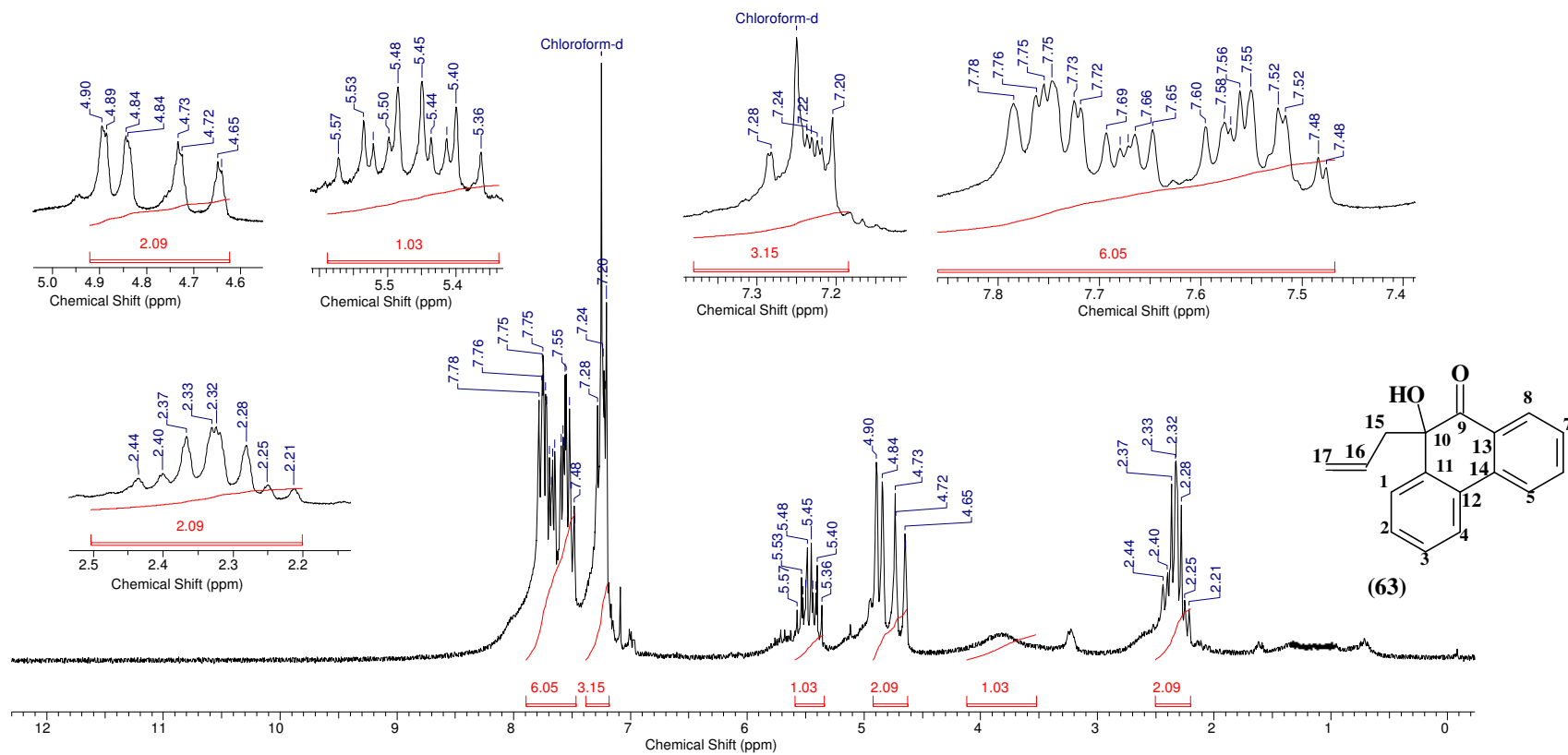
Espectro 38: RMN de ^{13}C do composto **61**.



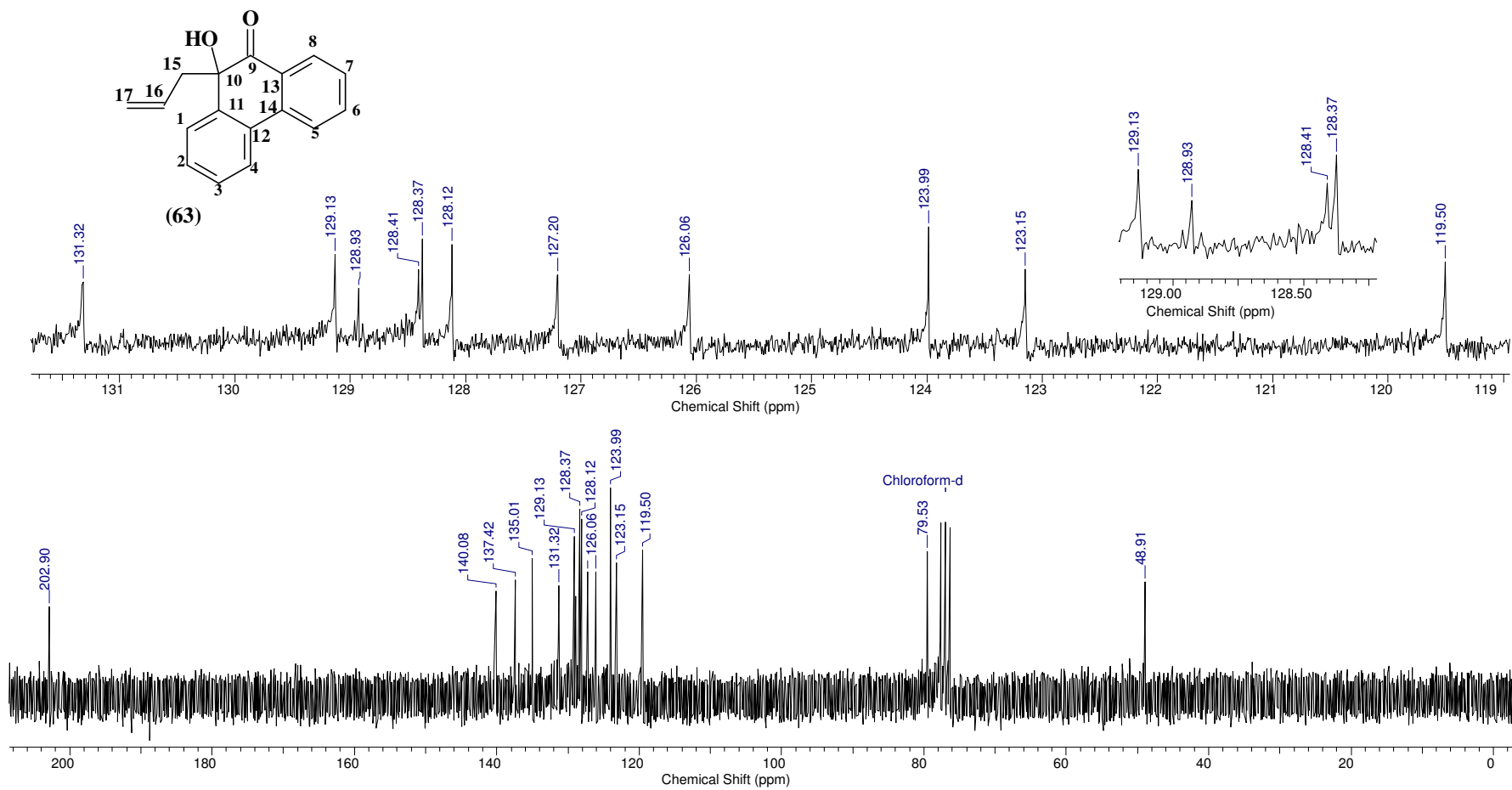
Espectro 39: IV do composto **63**.



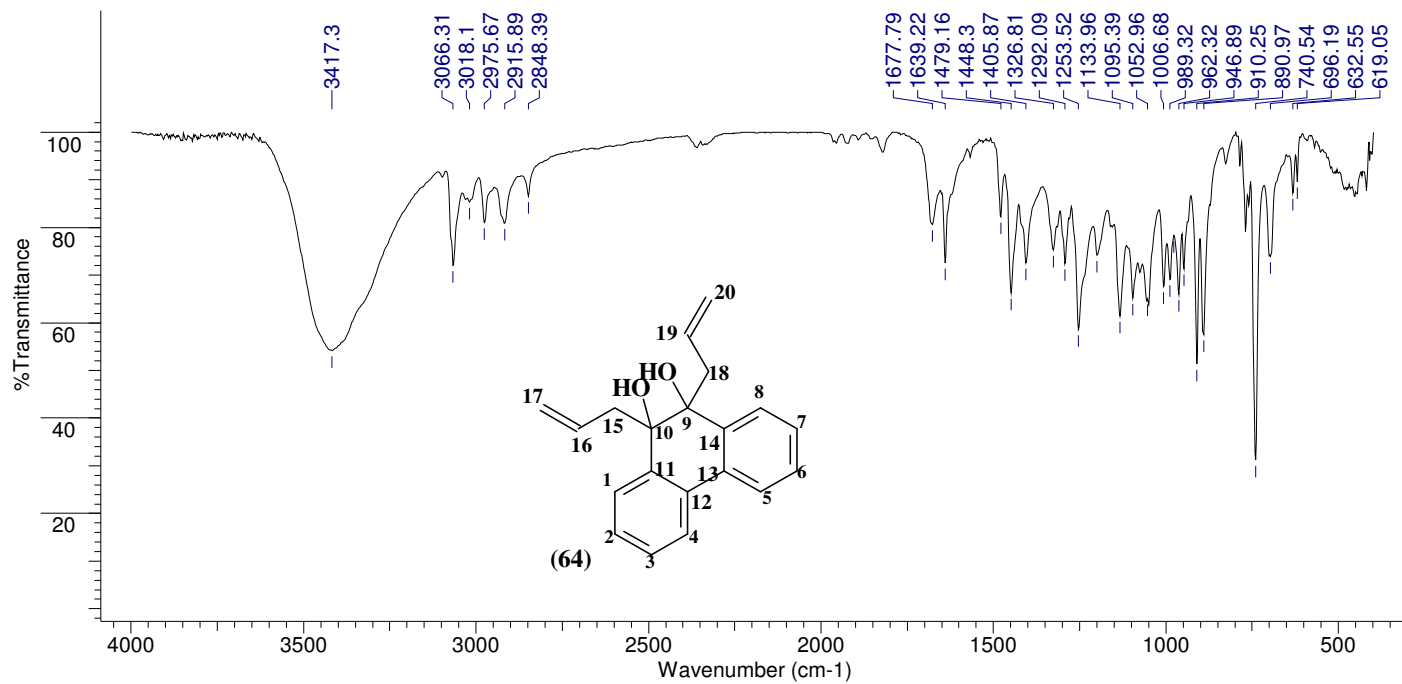
Espectro 40: E.M. do composto **63**.



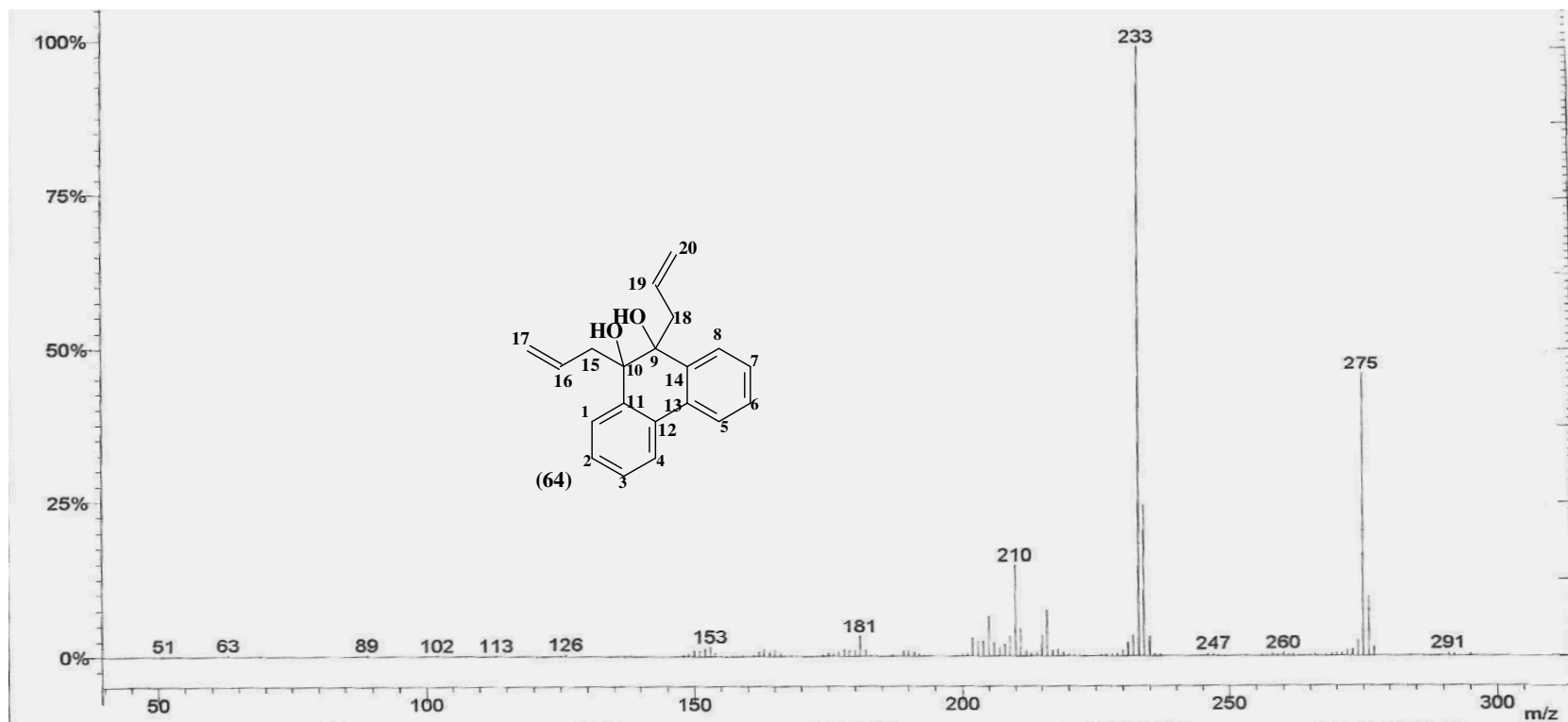
Spectro 41: RMN ^1H do composto 63.



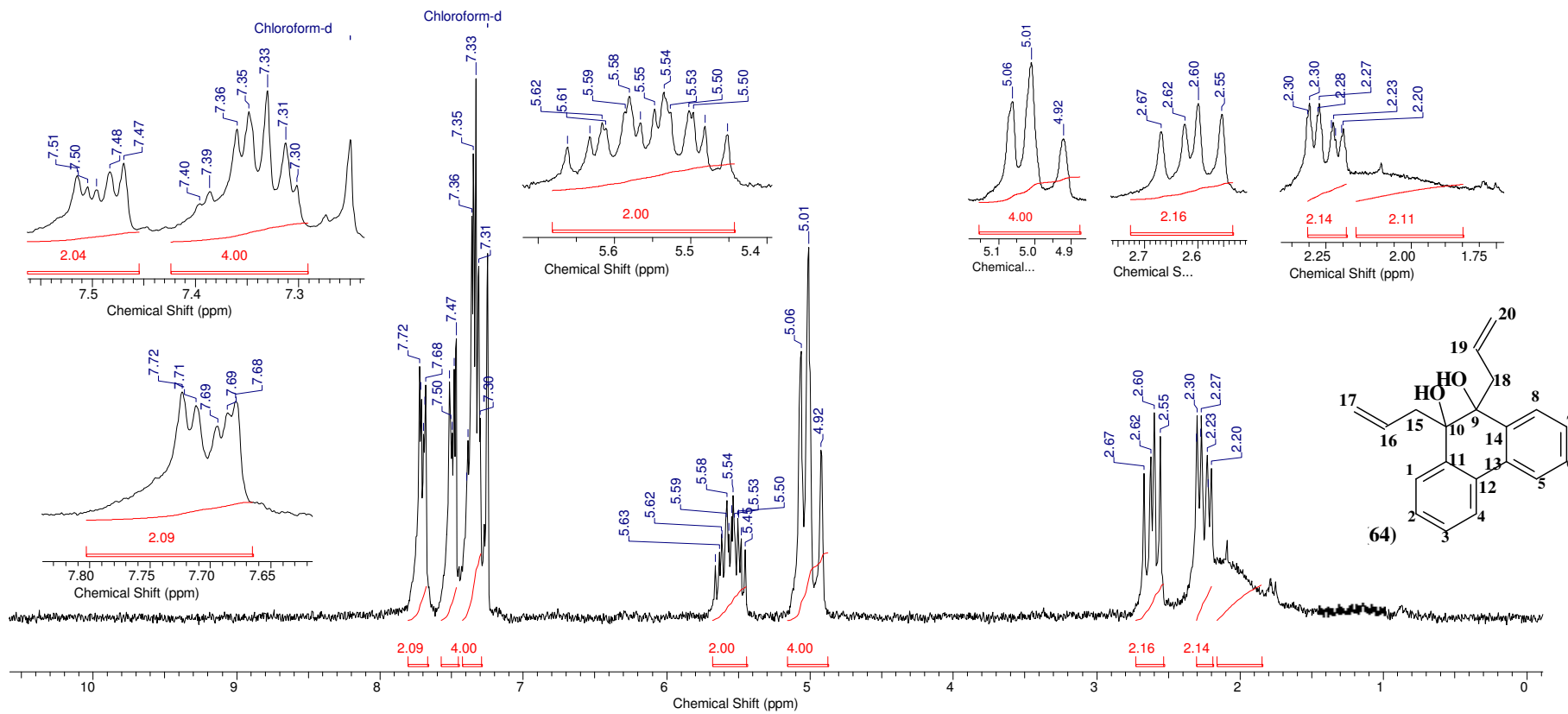
Espectro 42: RMN ^{13}C do composto **63.**



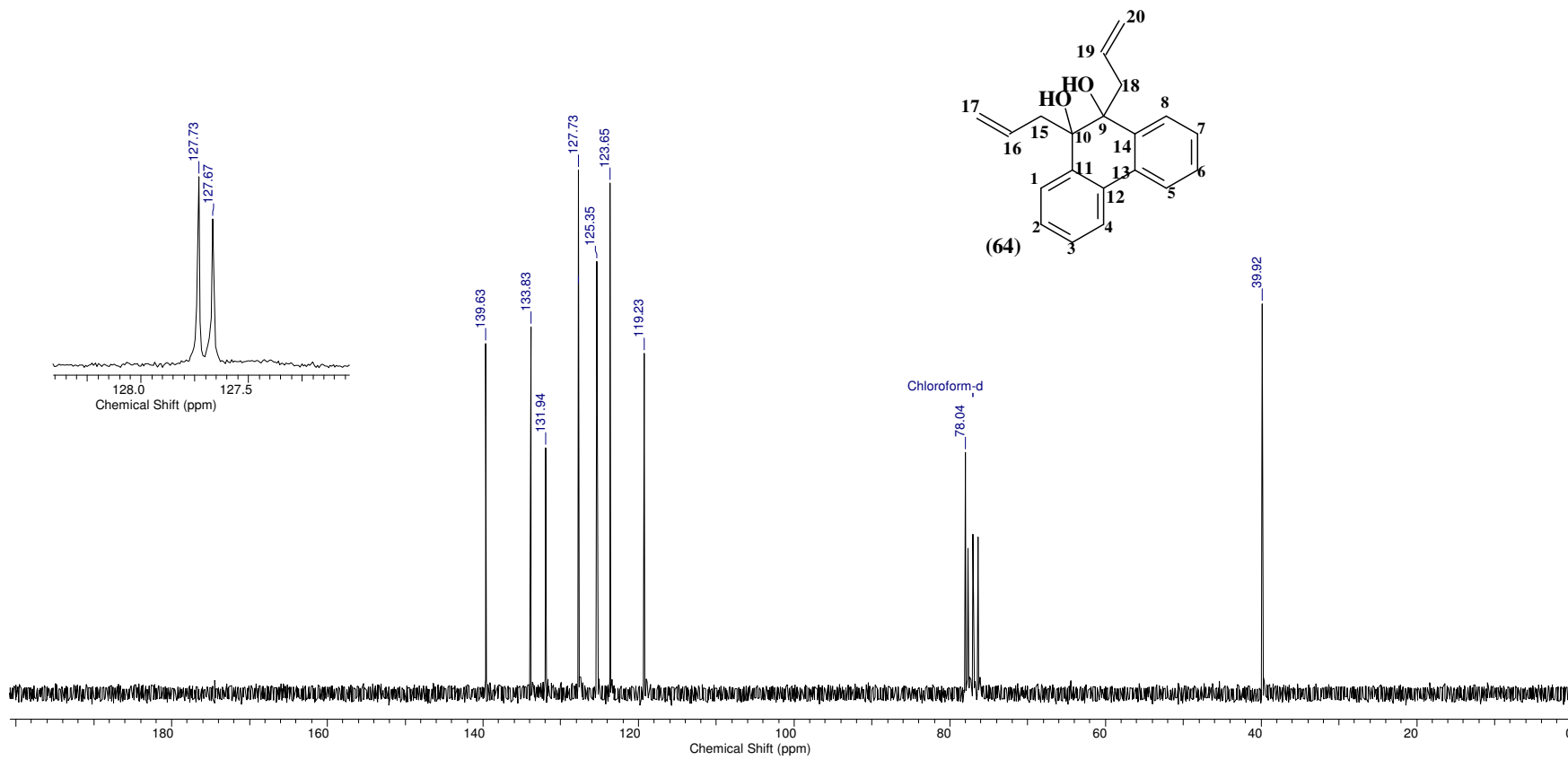
Espectro 43: IV do composto 64.



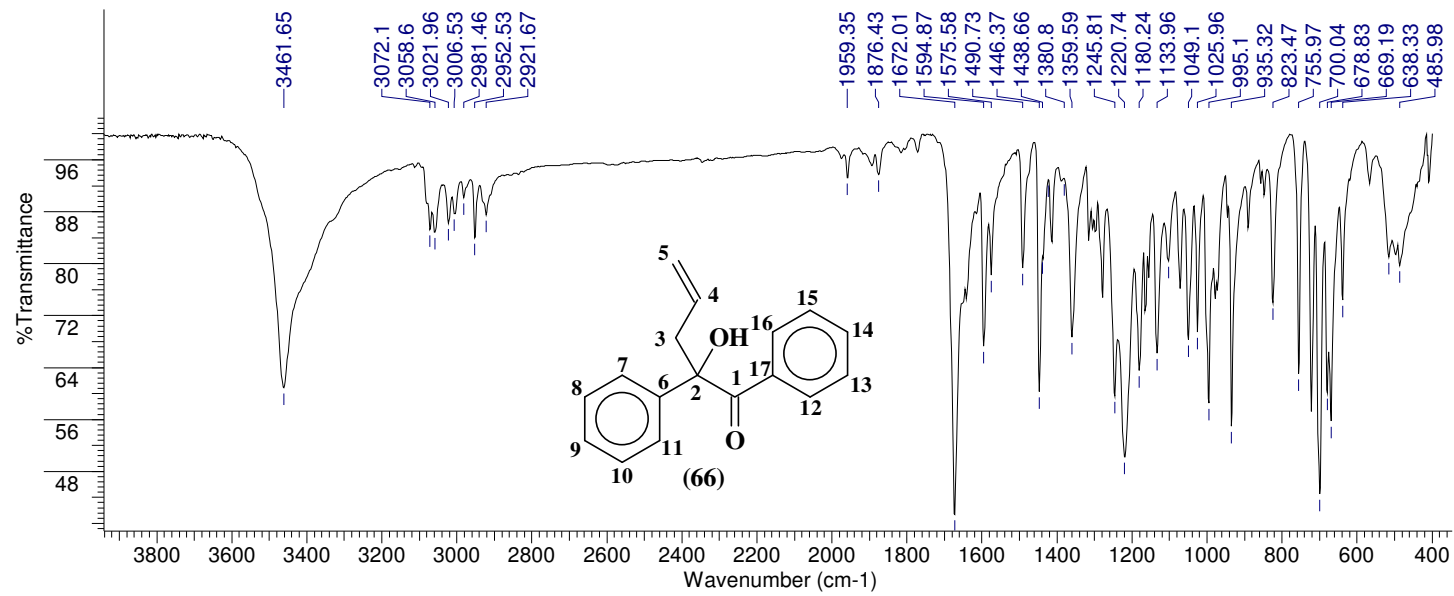
Espectro 44: E.M. do composto **64**.



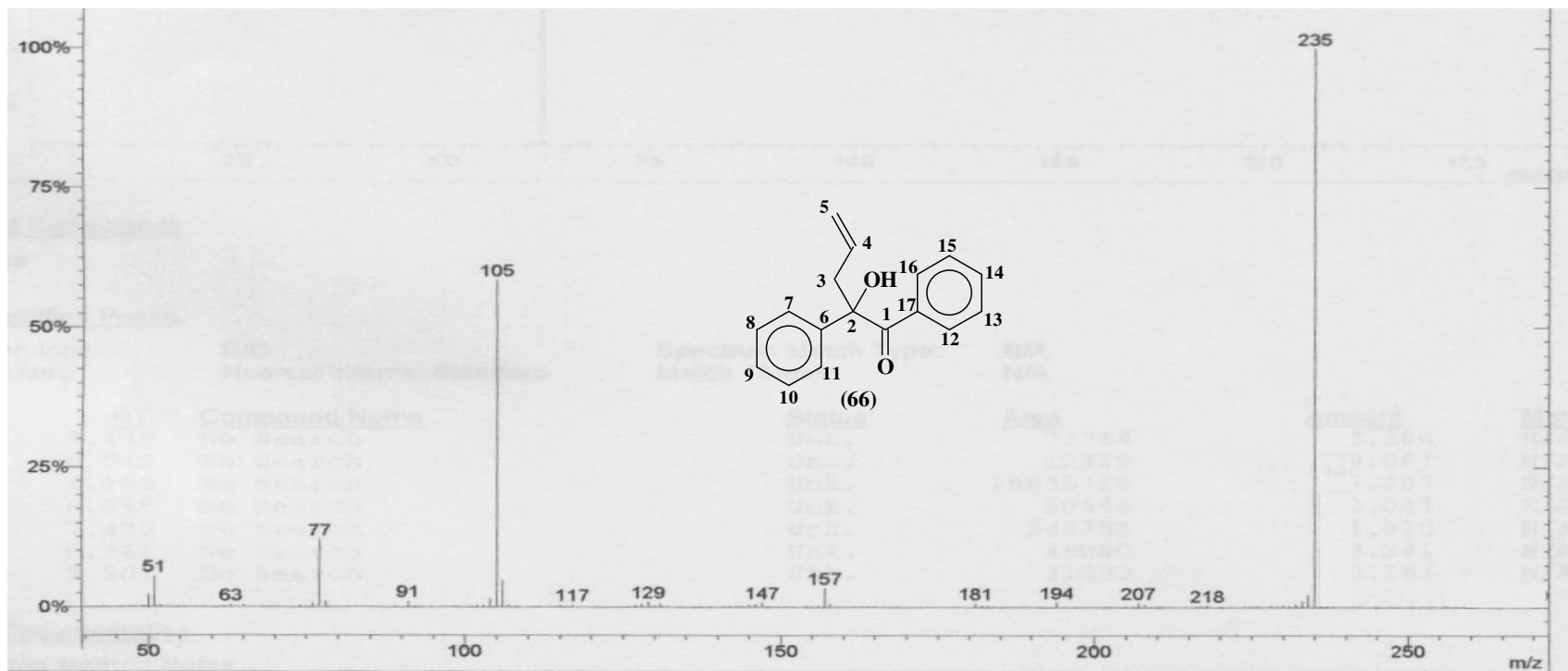
Espectro 45: RMN ^1H do composto **64**.



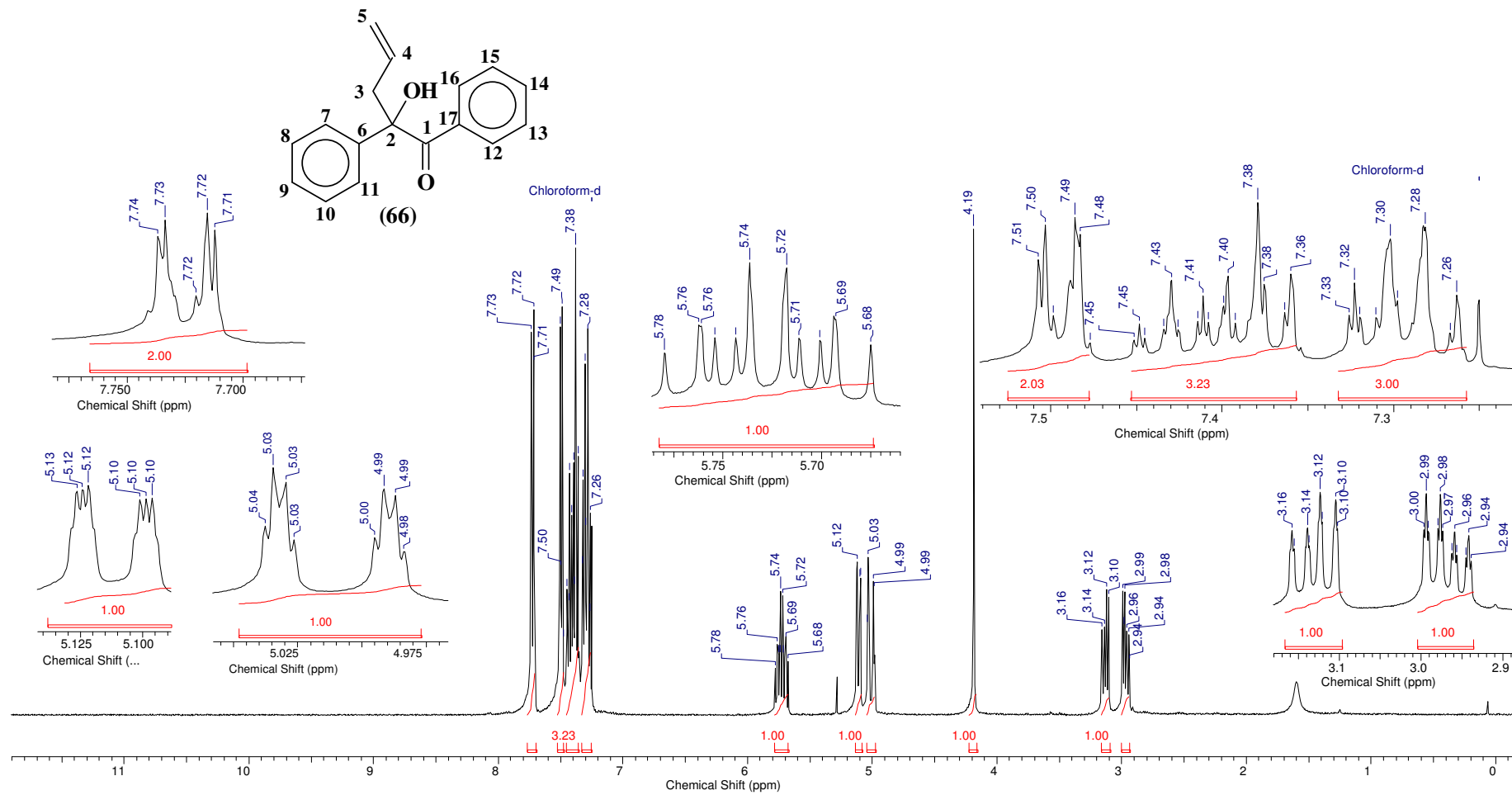
Espectro 46: RMN ¹³C do composto **64.**



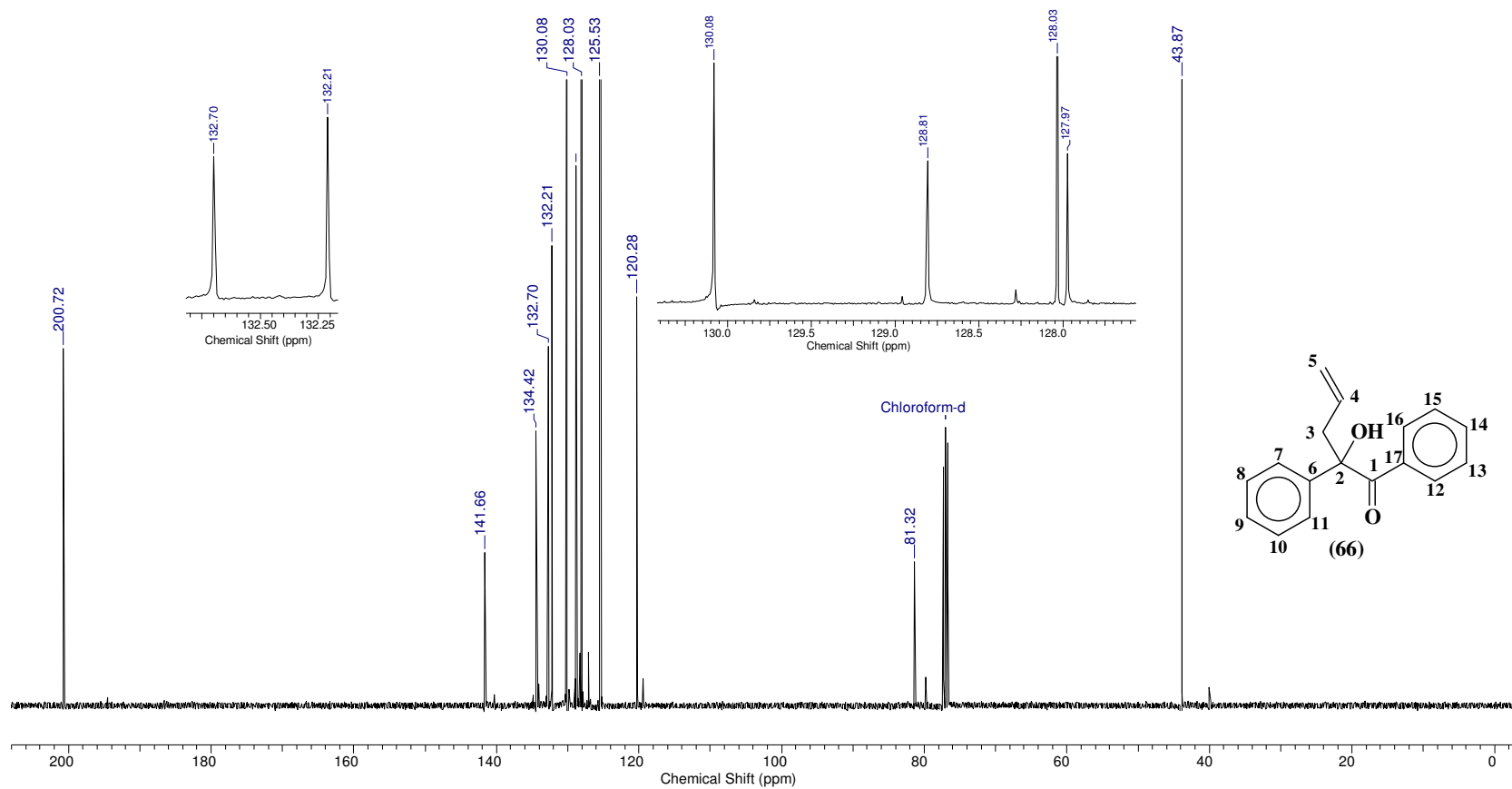
Espectro 47: IV do composto **66**.



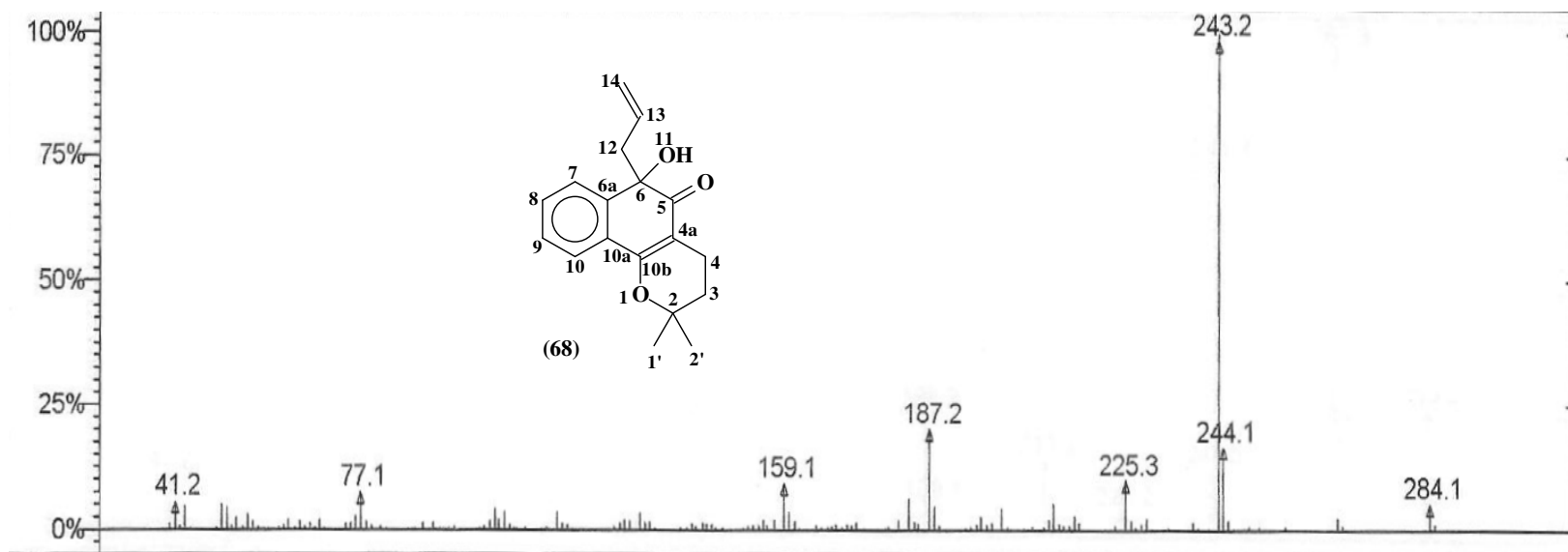
Espectro 48: E.M. do composto **66**.



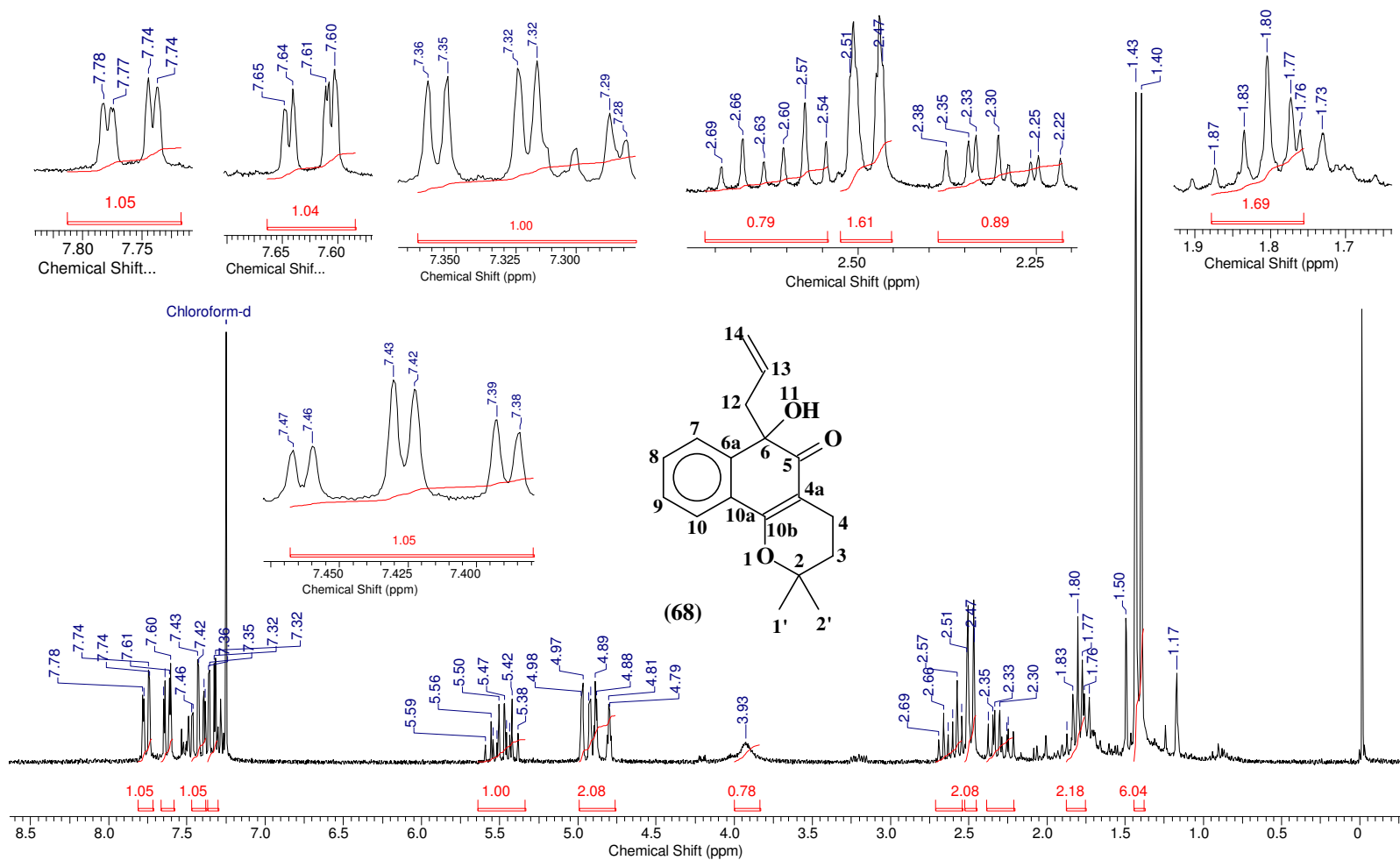
Espectro 49: RMN ^1H do composto 66.



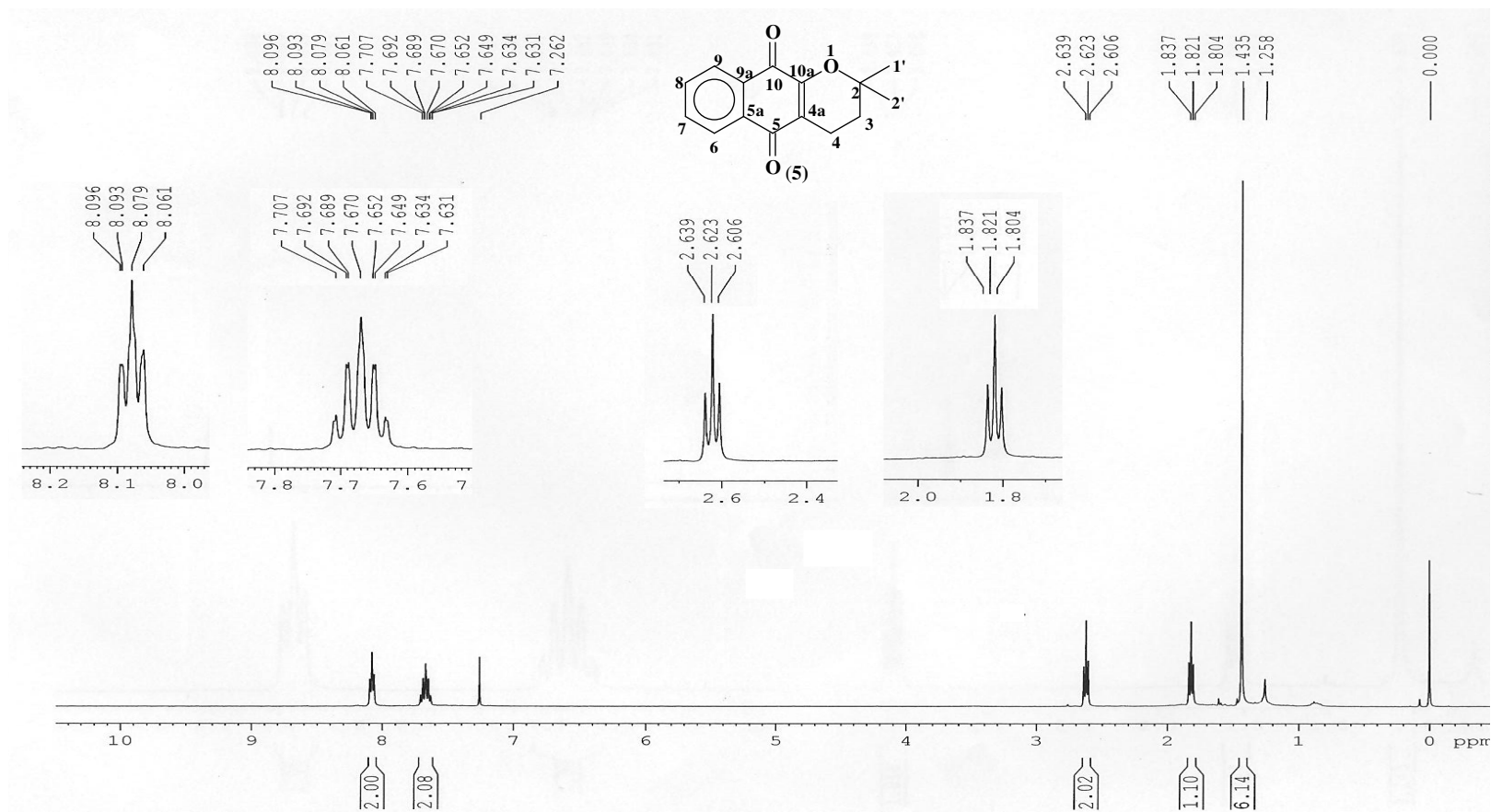
Espectro 50: RMN ^{13}C do composto **66.**



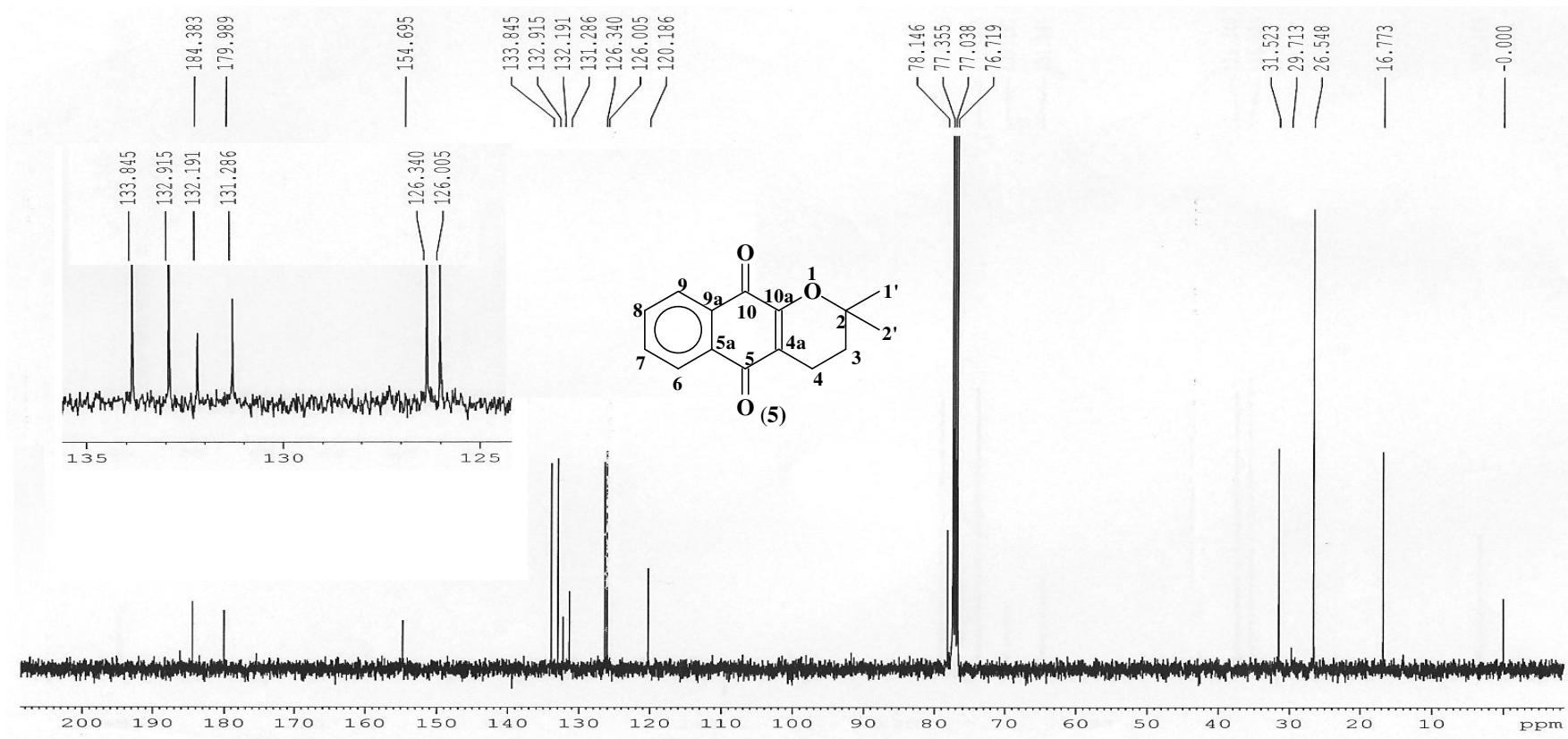
Espectro 51: E.M do composto **68**.



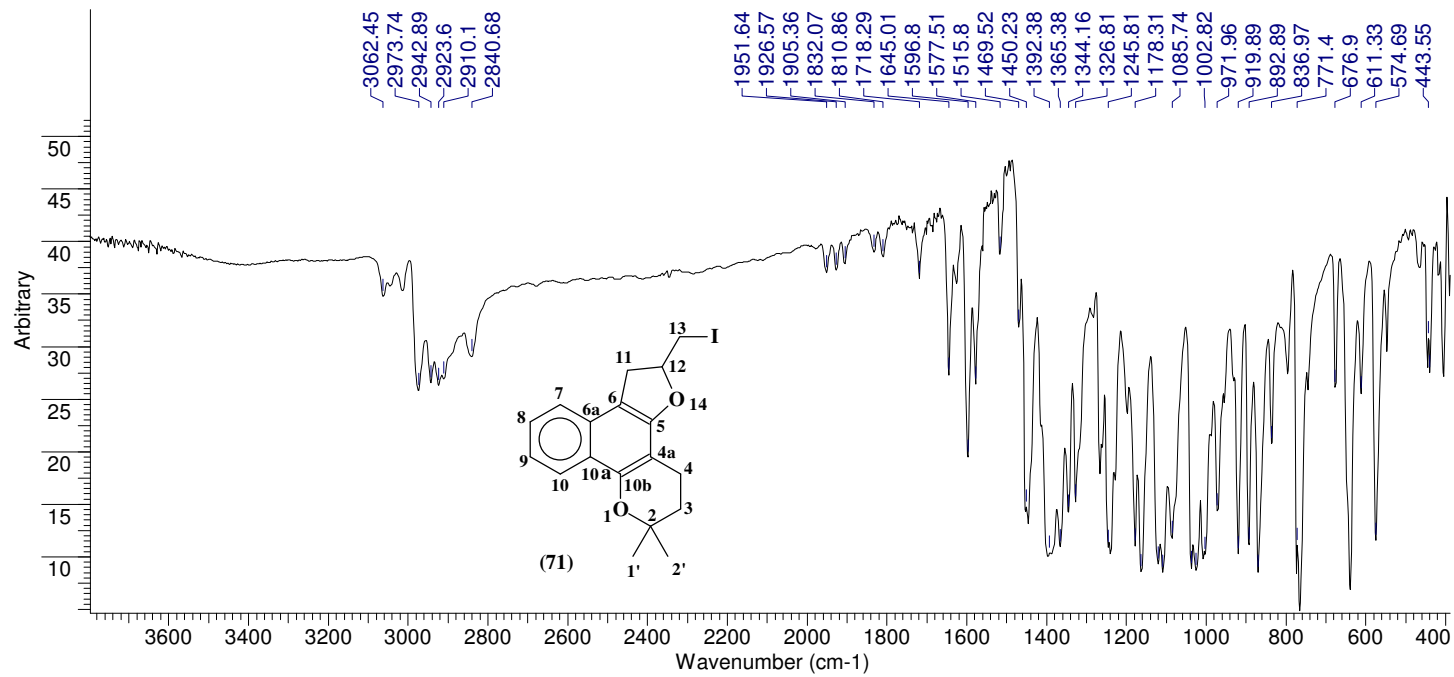
Espectro 52: RMN de ^1H do composto **68**.



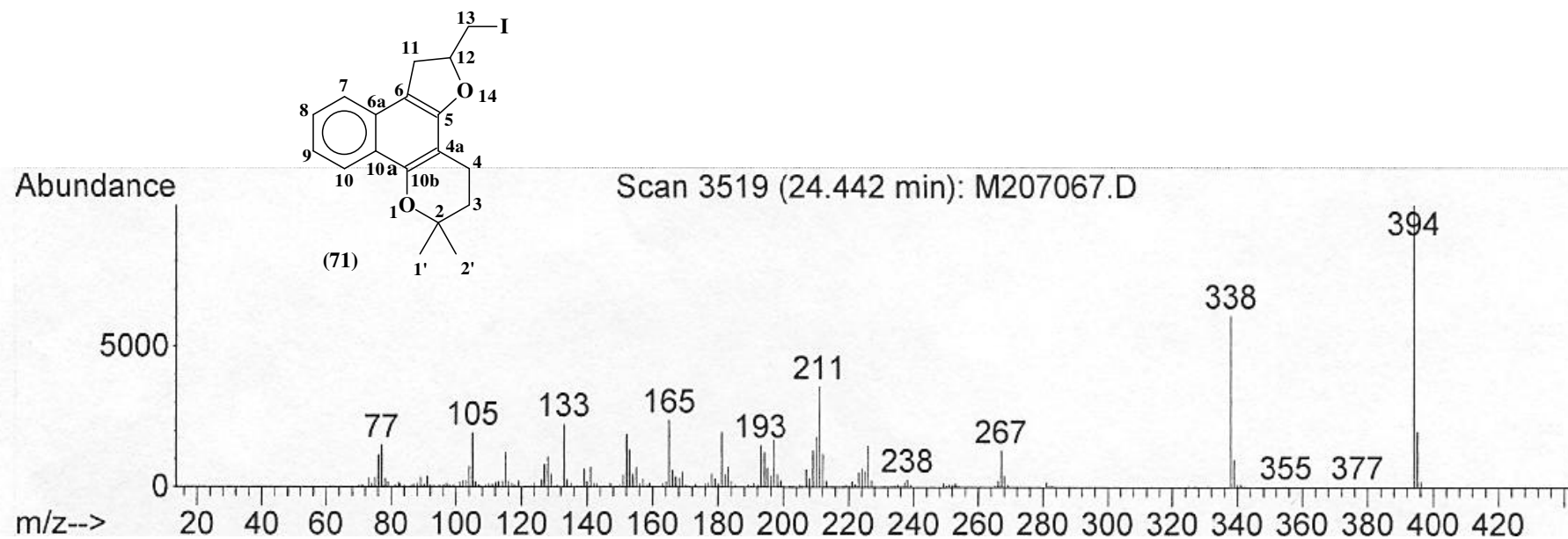
Espectro 53: RMN de ¹H do composto **5**.



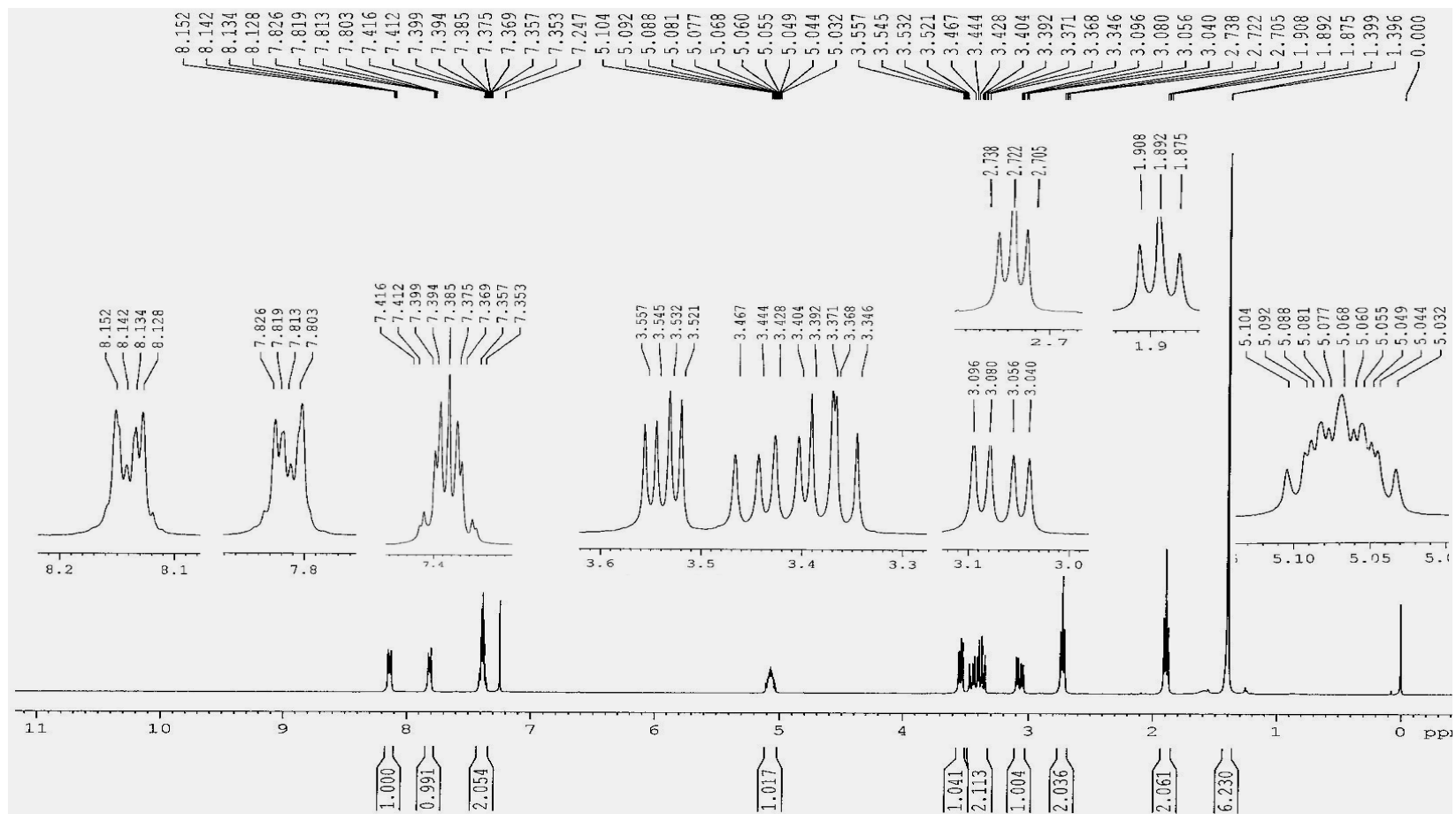
Espectro 54: RMN de ¹³C do composto 5.



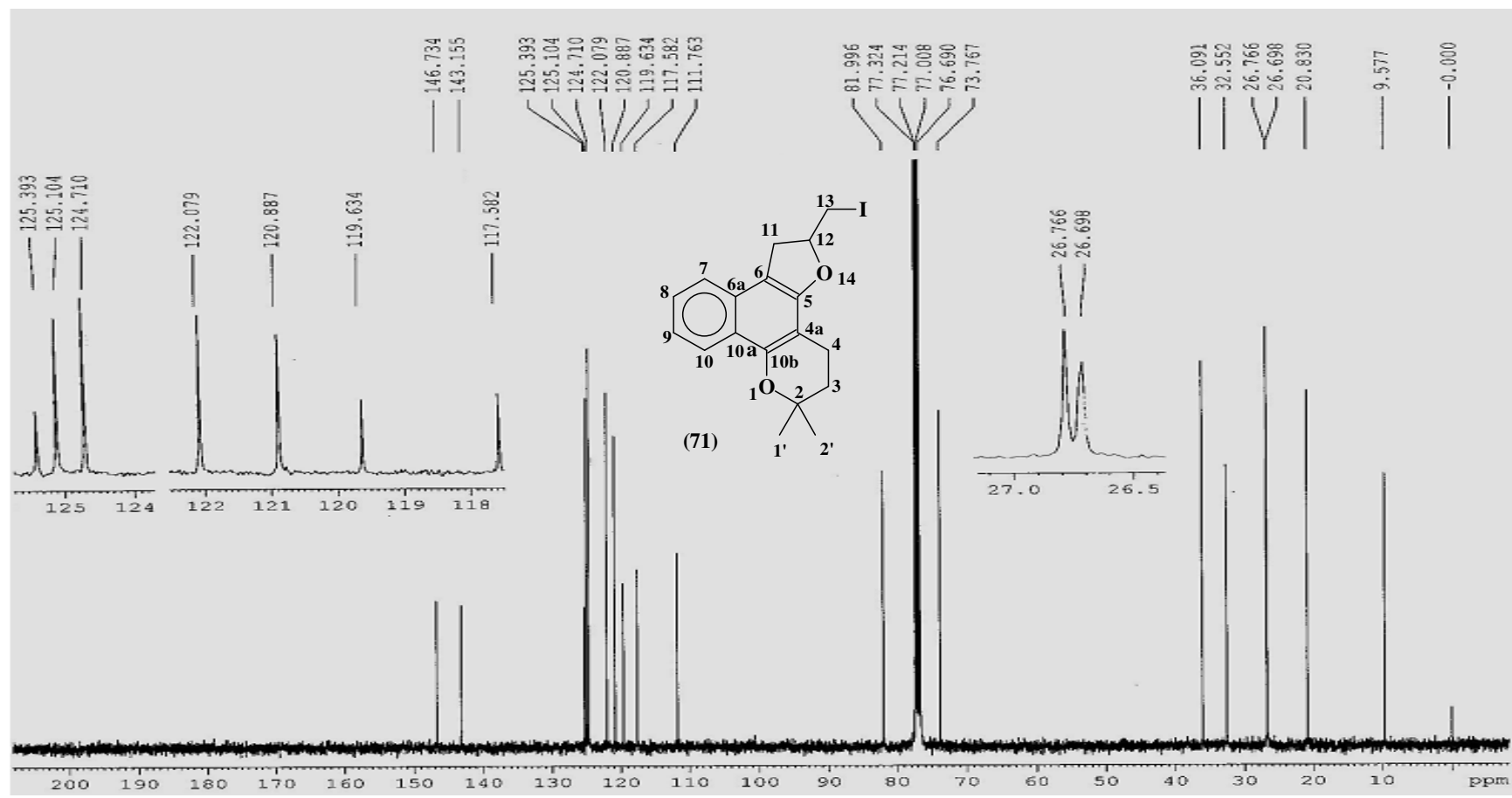
Espectro 55: IV do composto **71**.



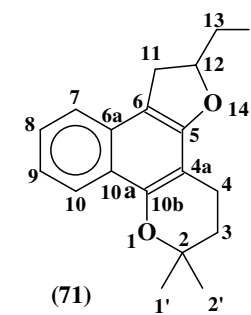
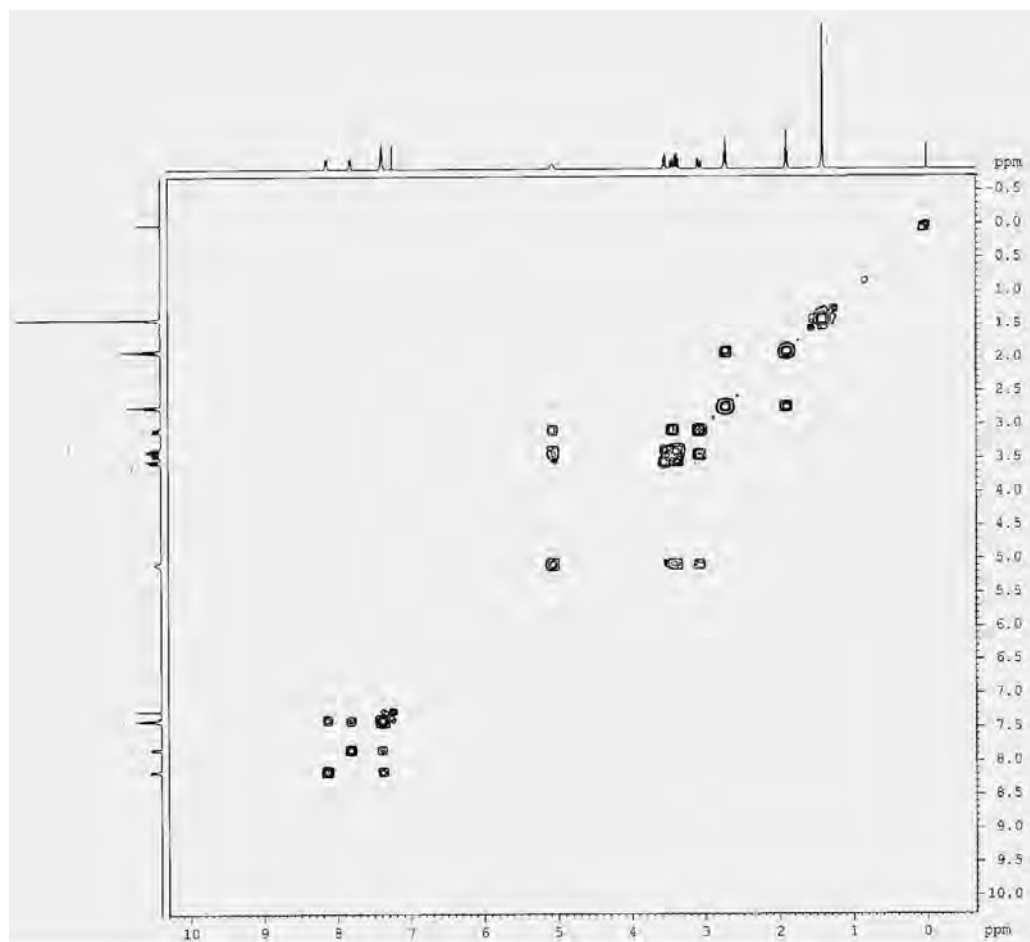
Espectro 56: E.M do composto **71**.



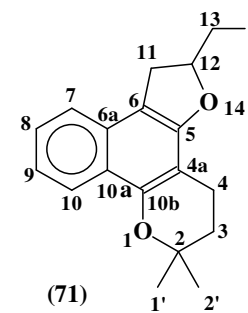
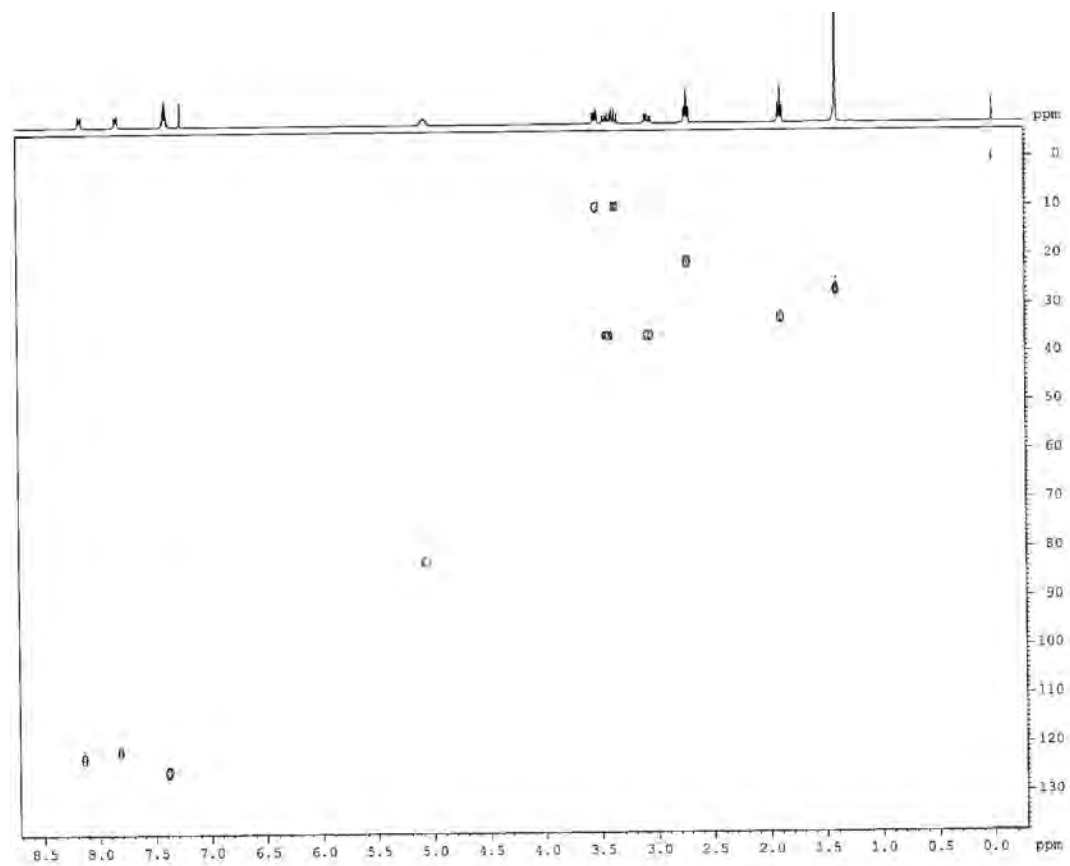
Espectro 57: RMN de ^1H do composto **71**.



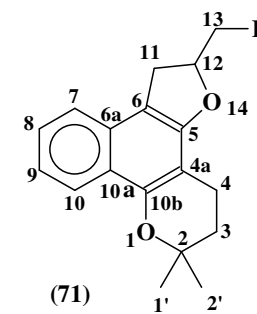
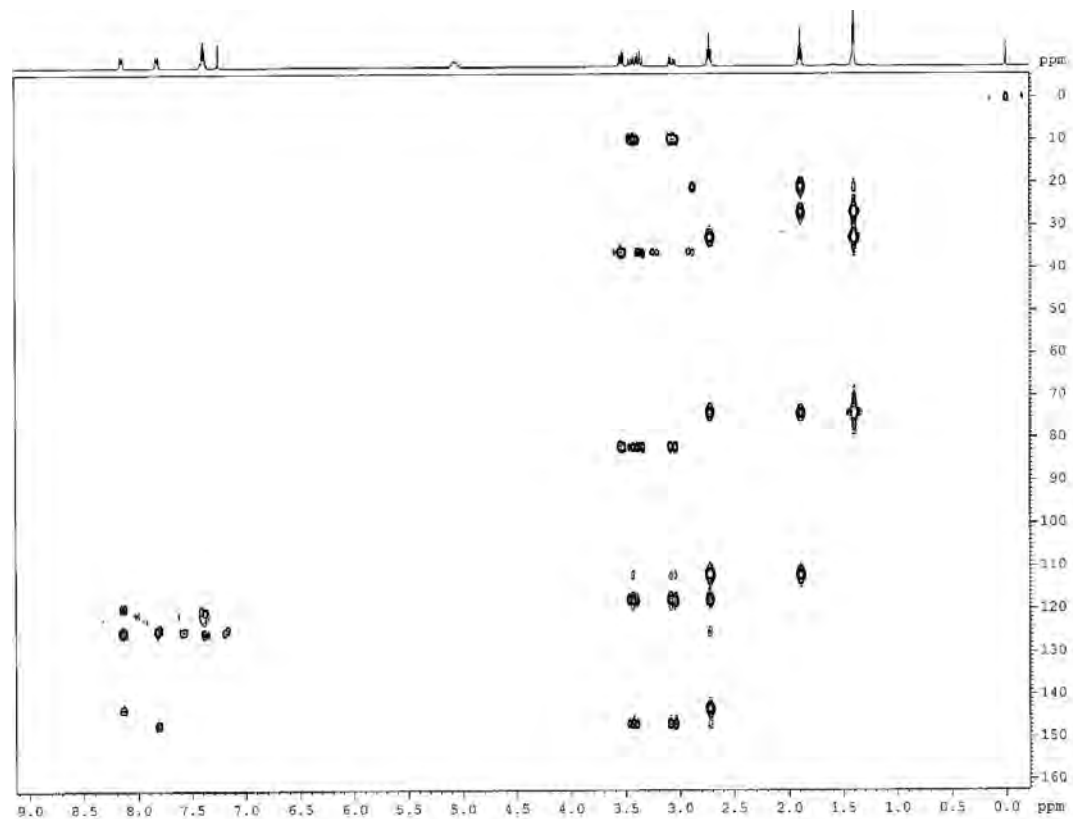
Espectro 58: RMN de ^{13}C do composto 71.



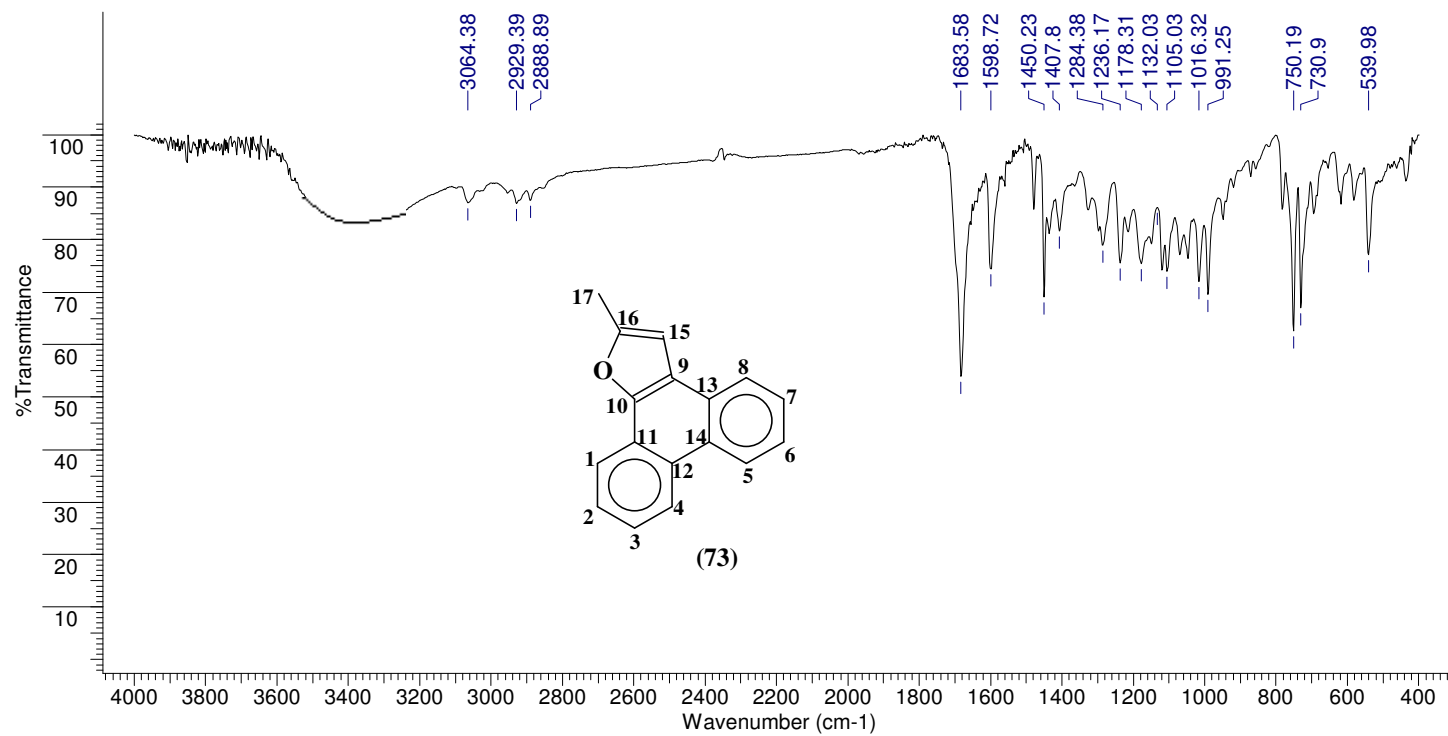
Espectro 59: RMN de H x H COSY do composto **71**.



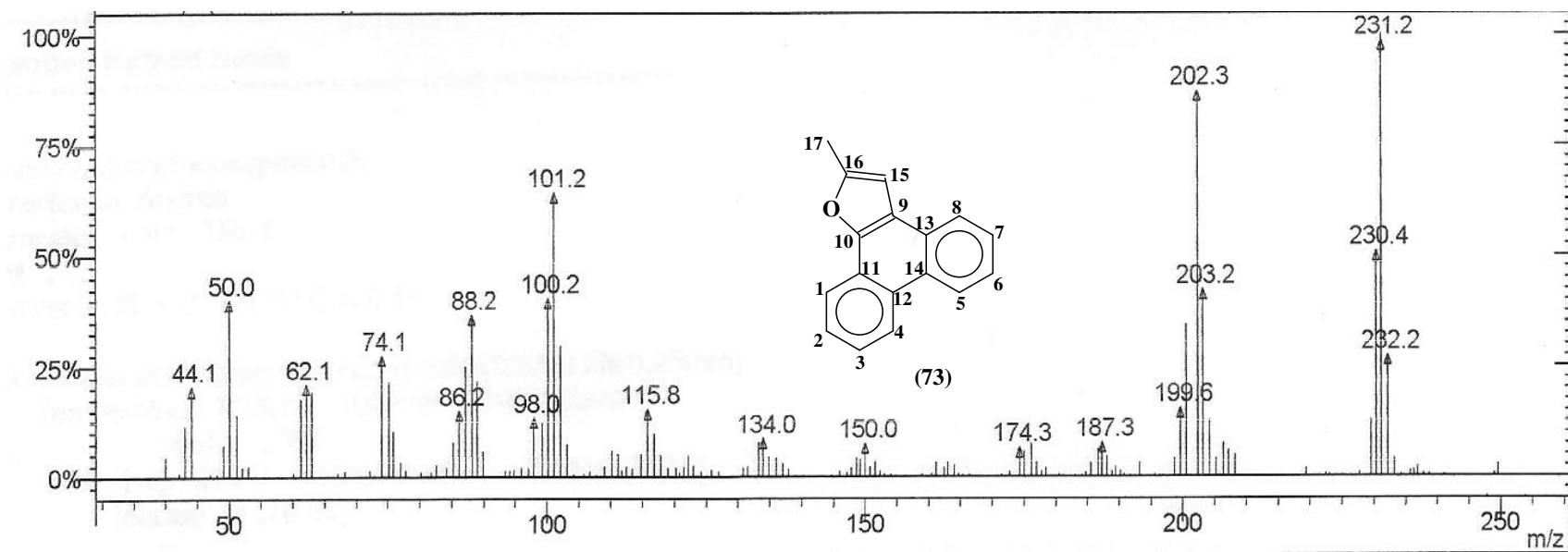
Espectro 60: RMN HET-COSY (J^1) do composto **71**.



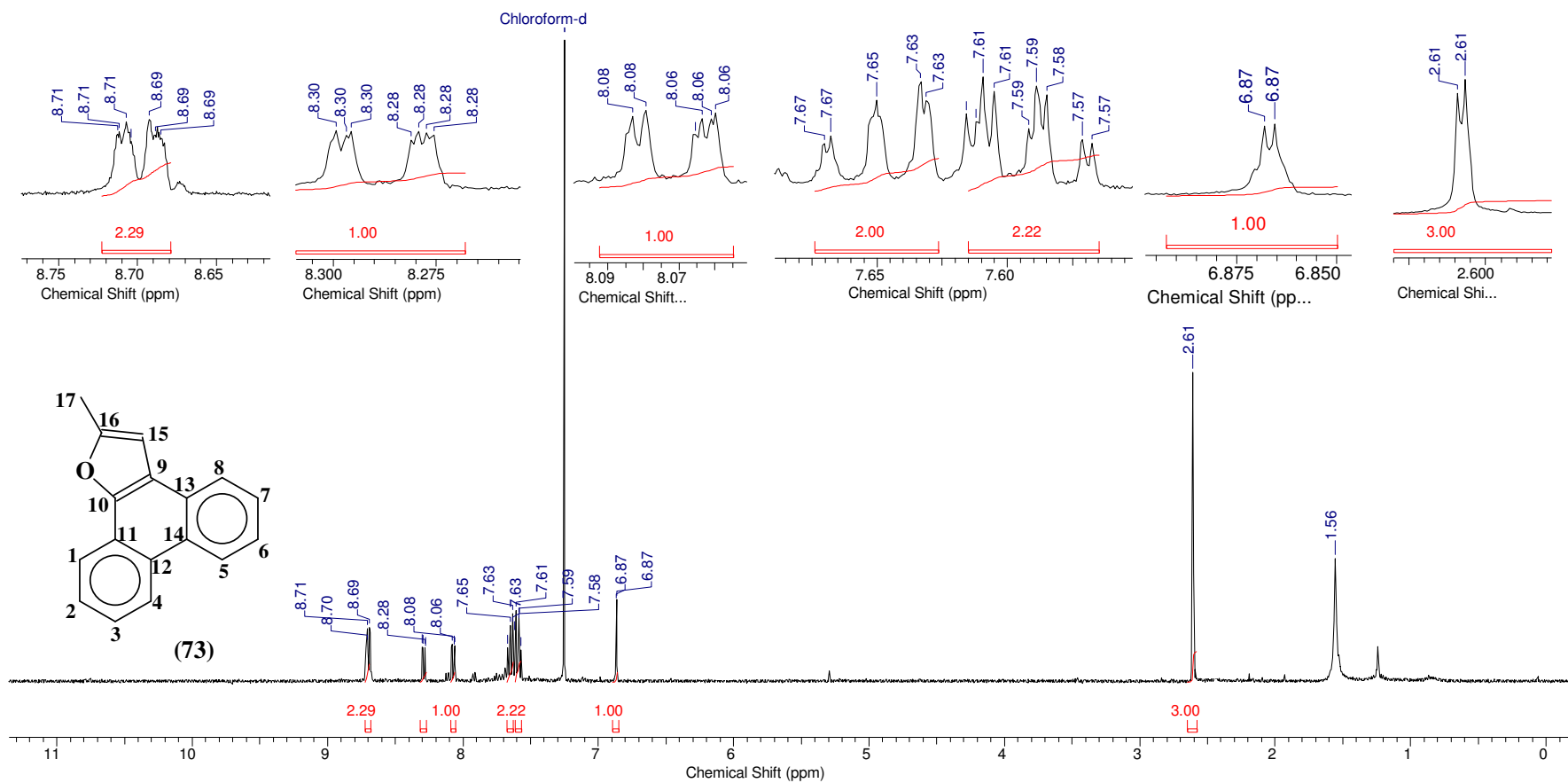
Espectro 61: RMN HET-COSY (J^2 e J^3) do composto **71**.



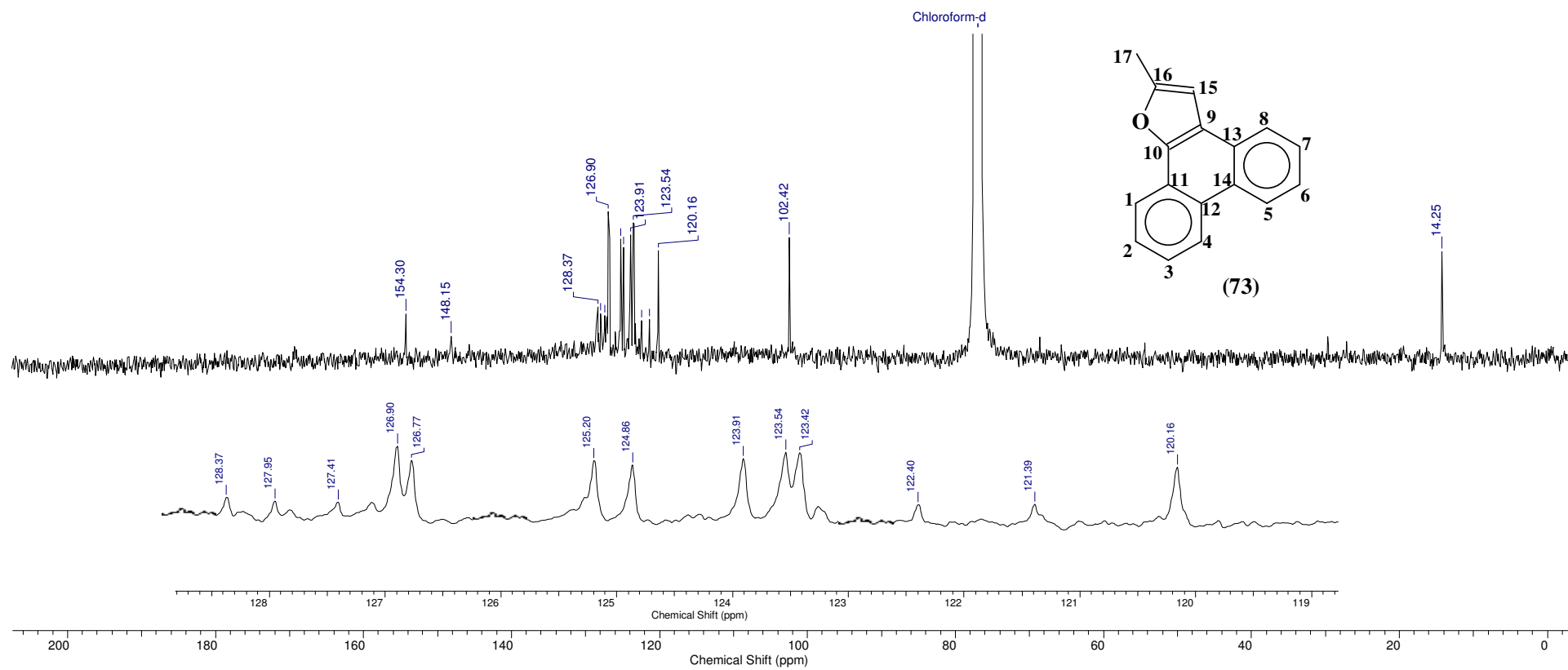
Espectro 62: IV do composto **73**.



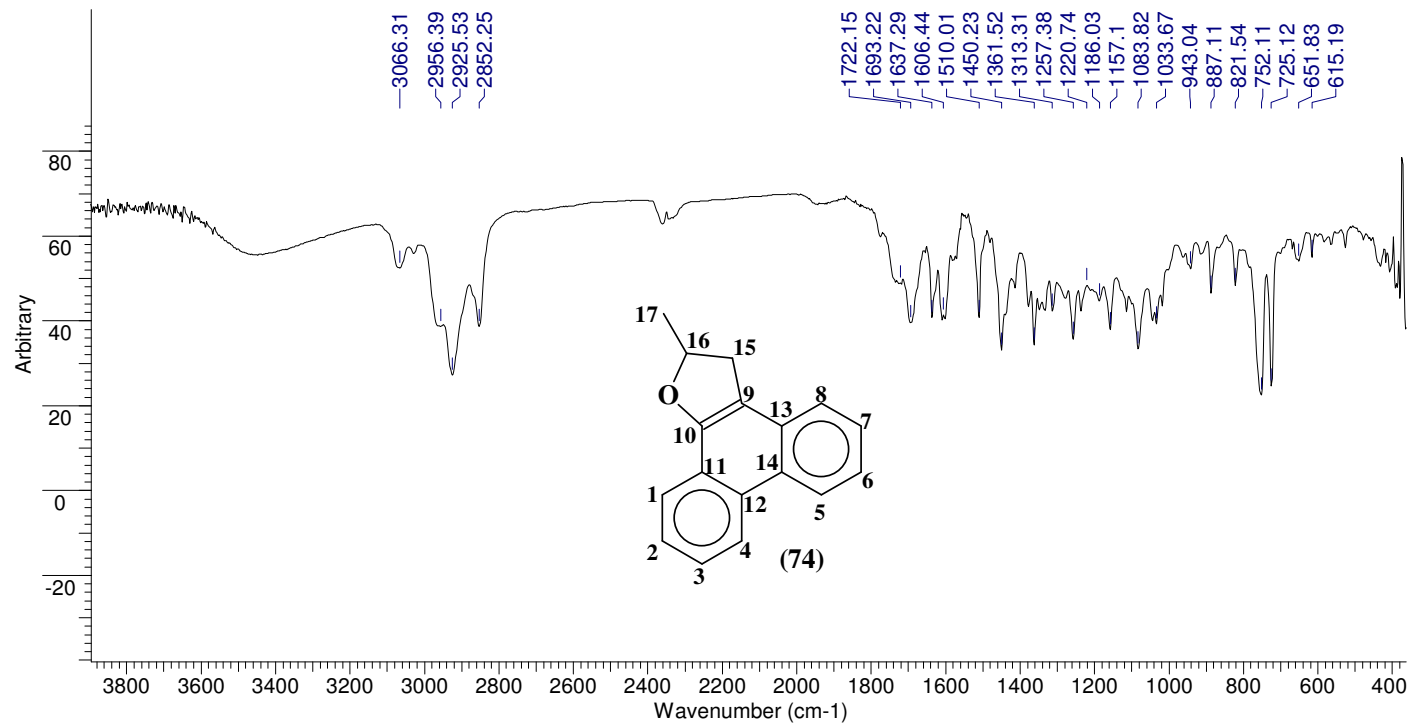
Espectro 63: E.M do composto **73**.



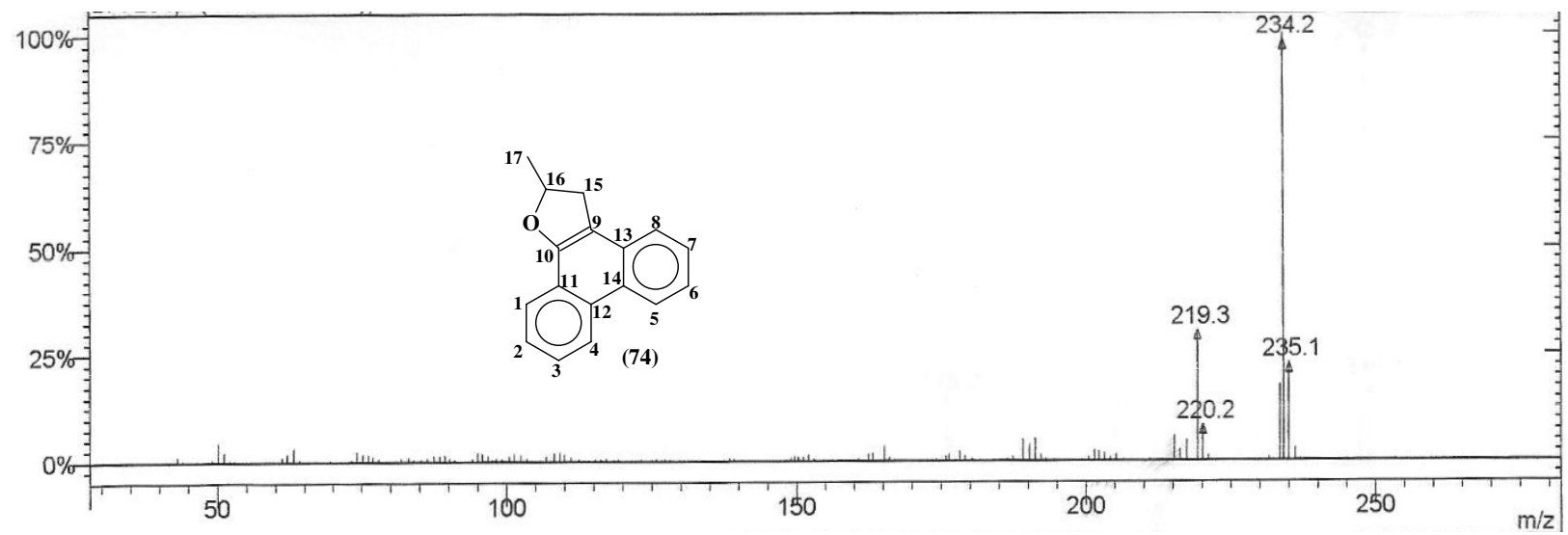
Espectro 64: RMN ^1H do composto **73**.



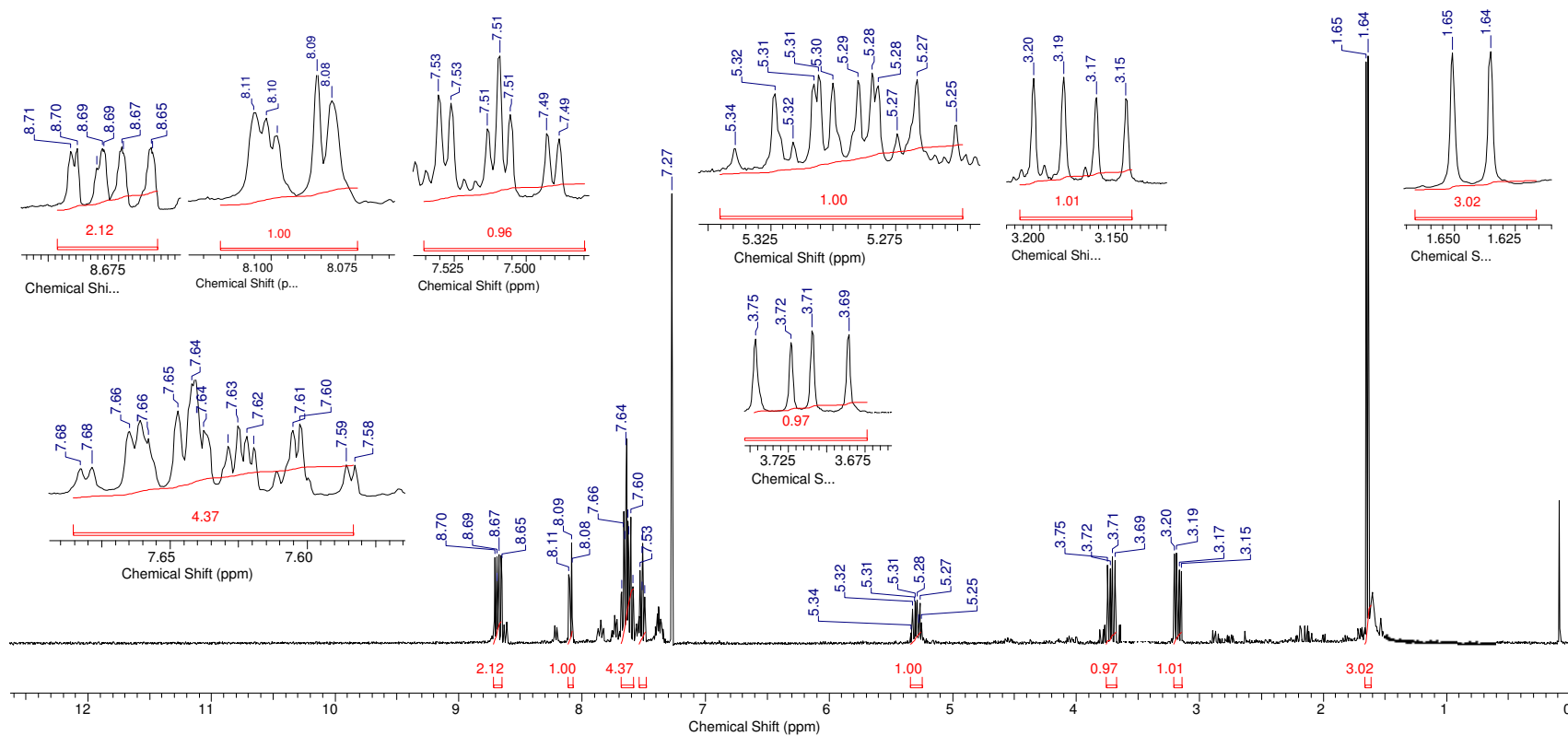
Espectro 65: RMN ^{13}C do composto **73.**



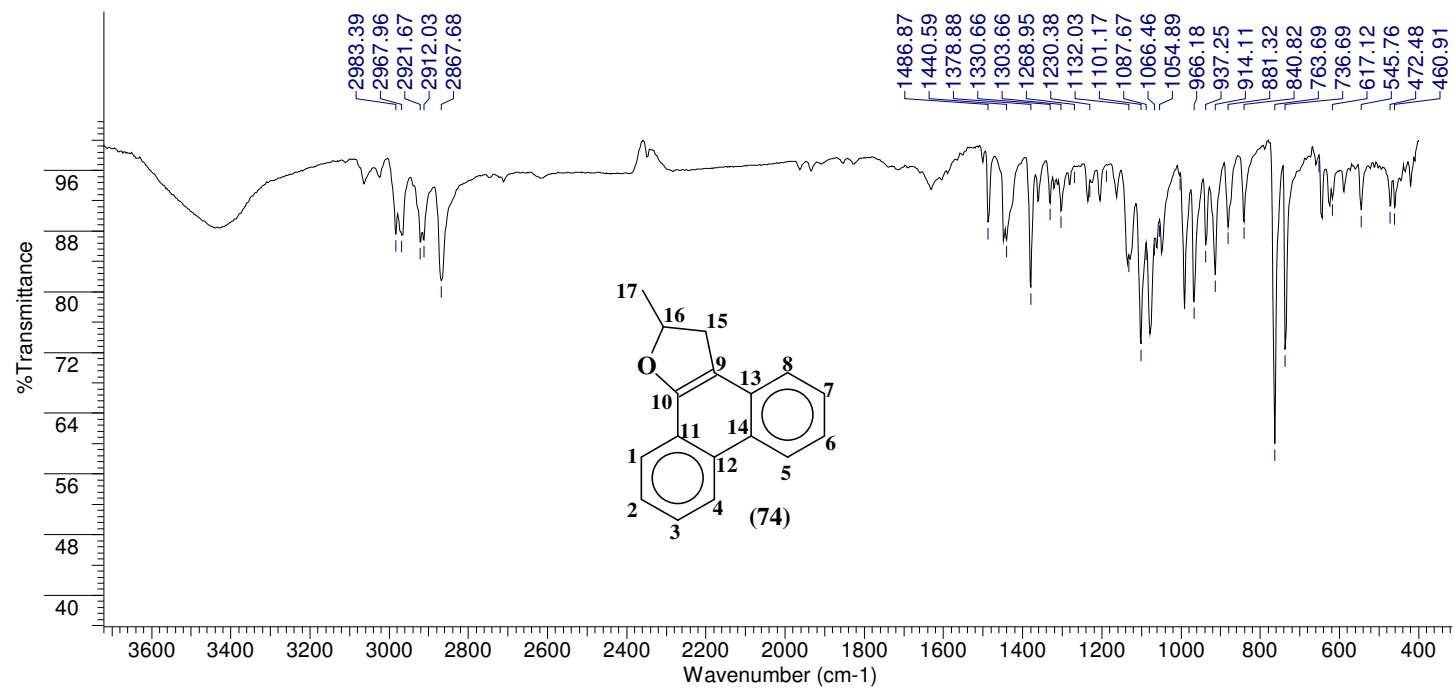
Espectro 66: IV do composto **74**.



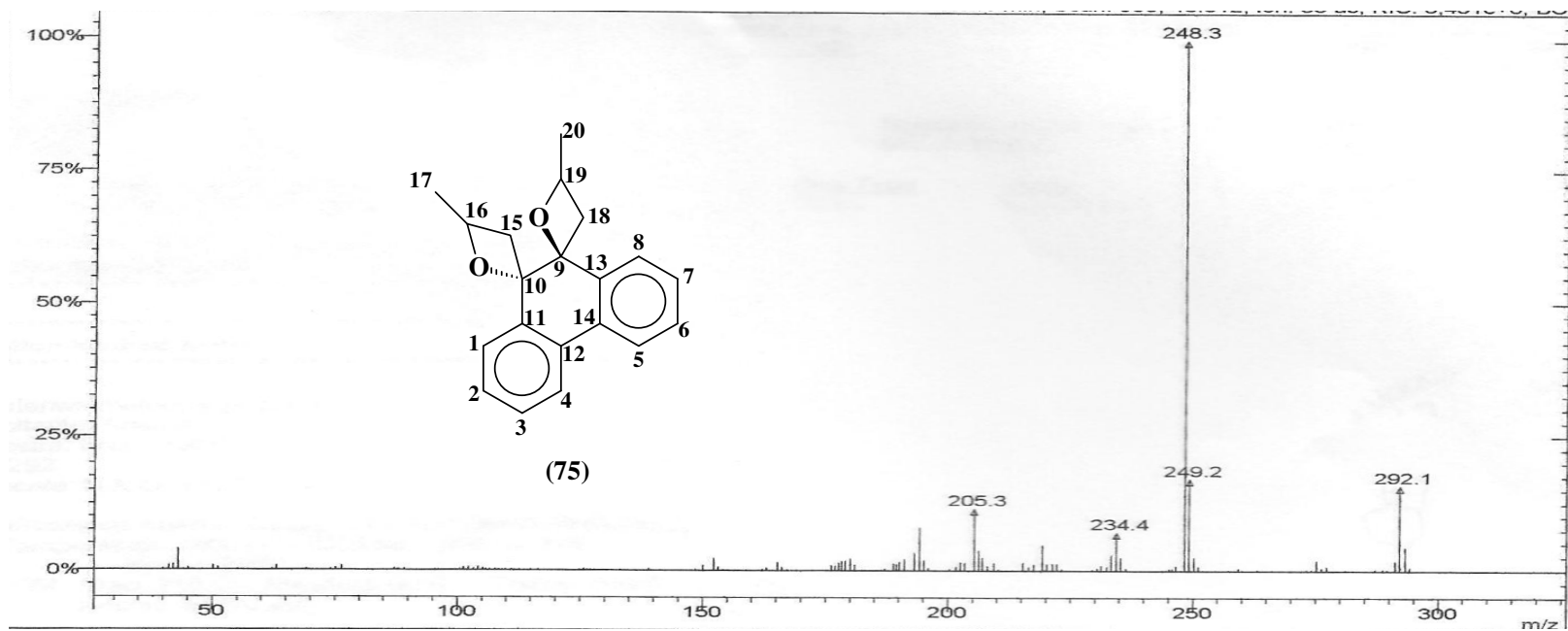
Espectro 67: E.M. do composto **74**.



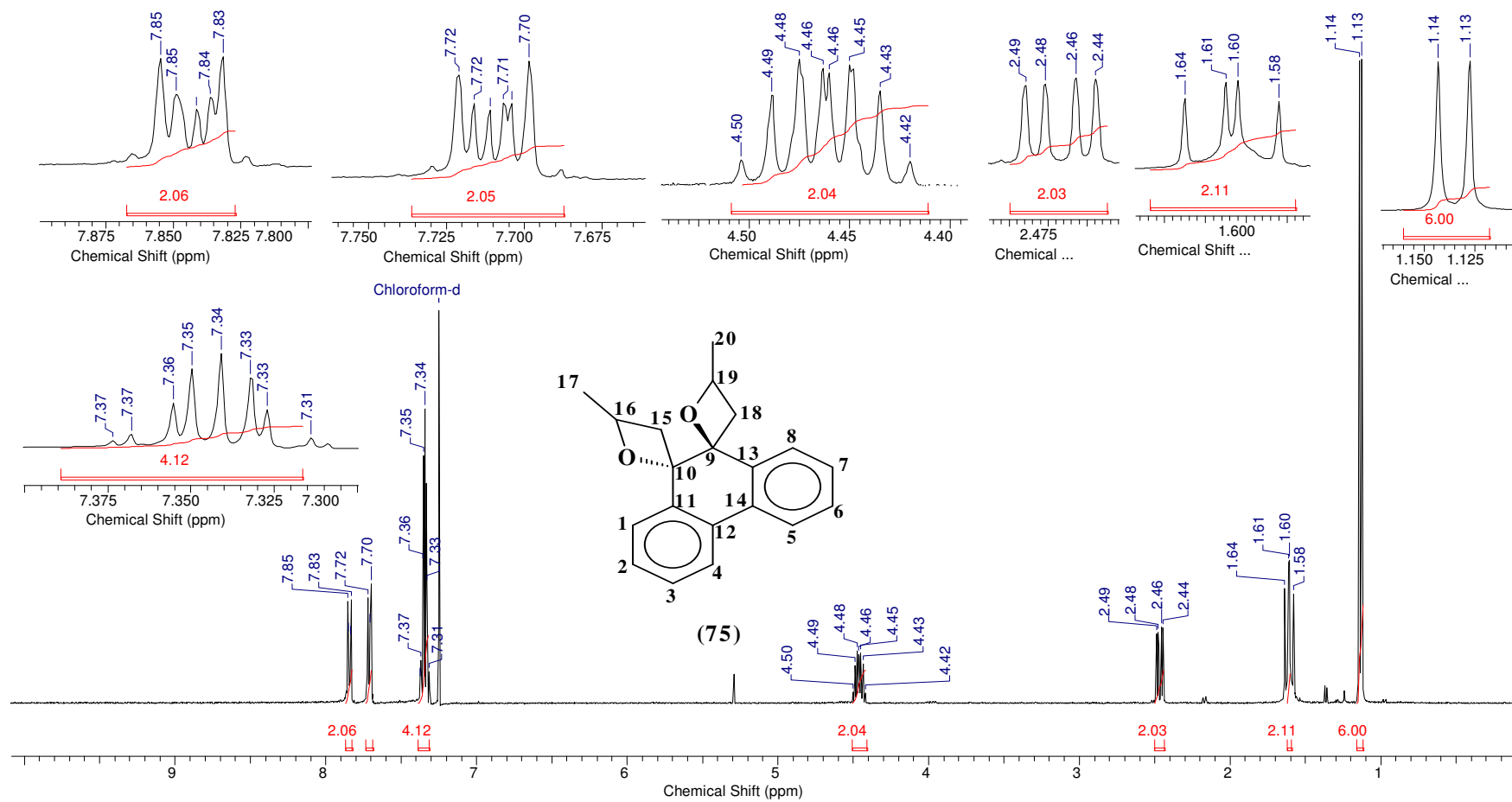
Espectro 68: RMN ¹H do composto 74.



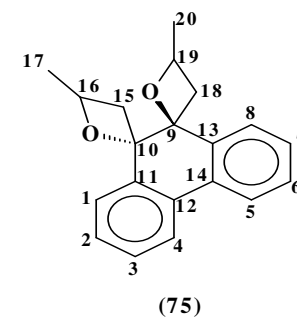
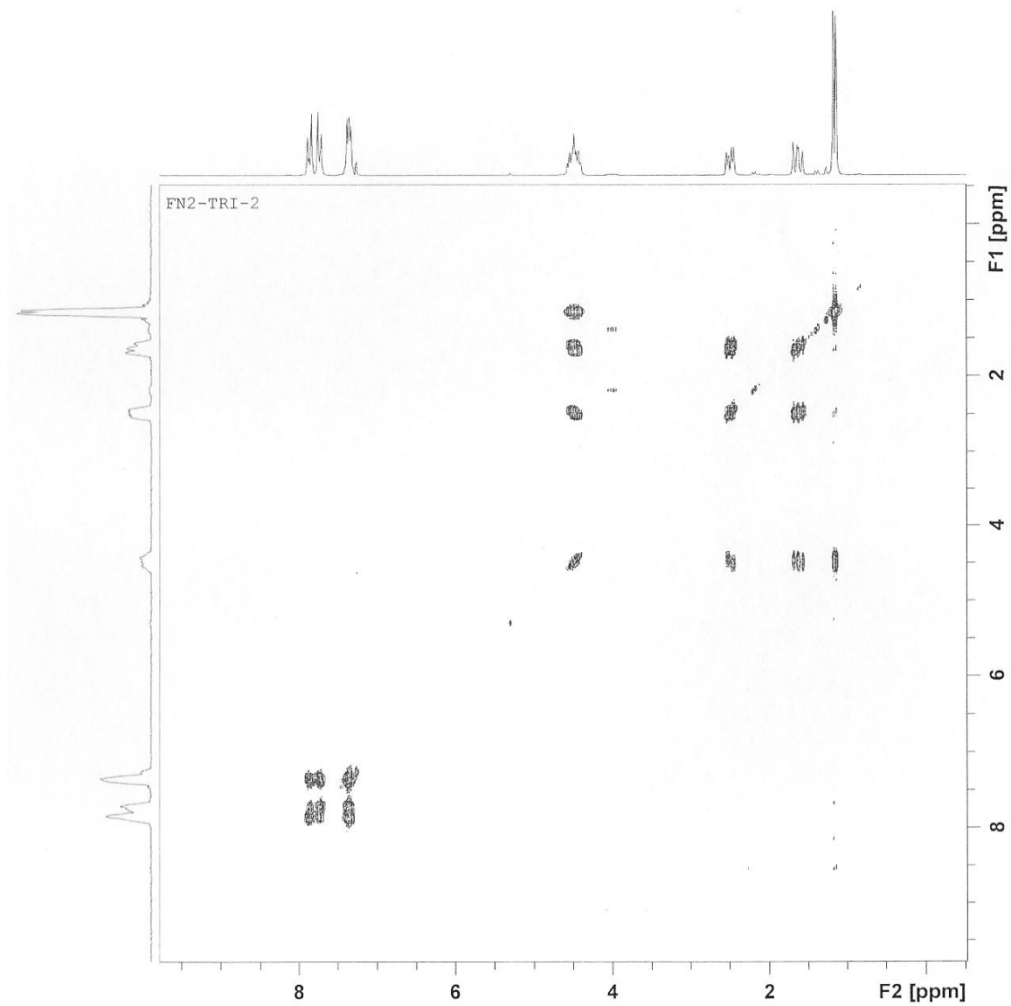
Espectro 70: IV do composto **75**.



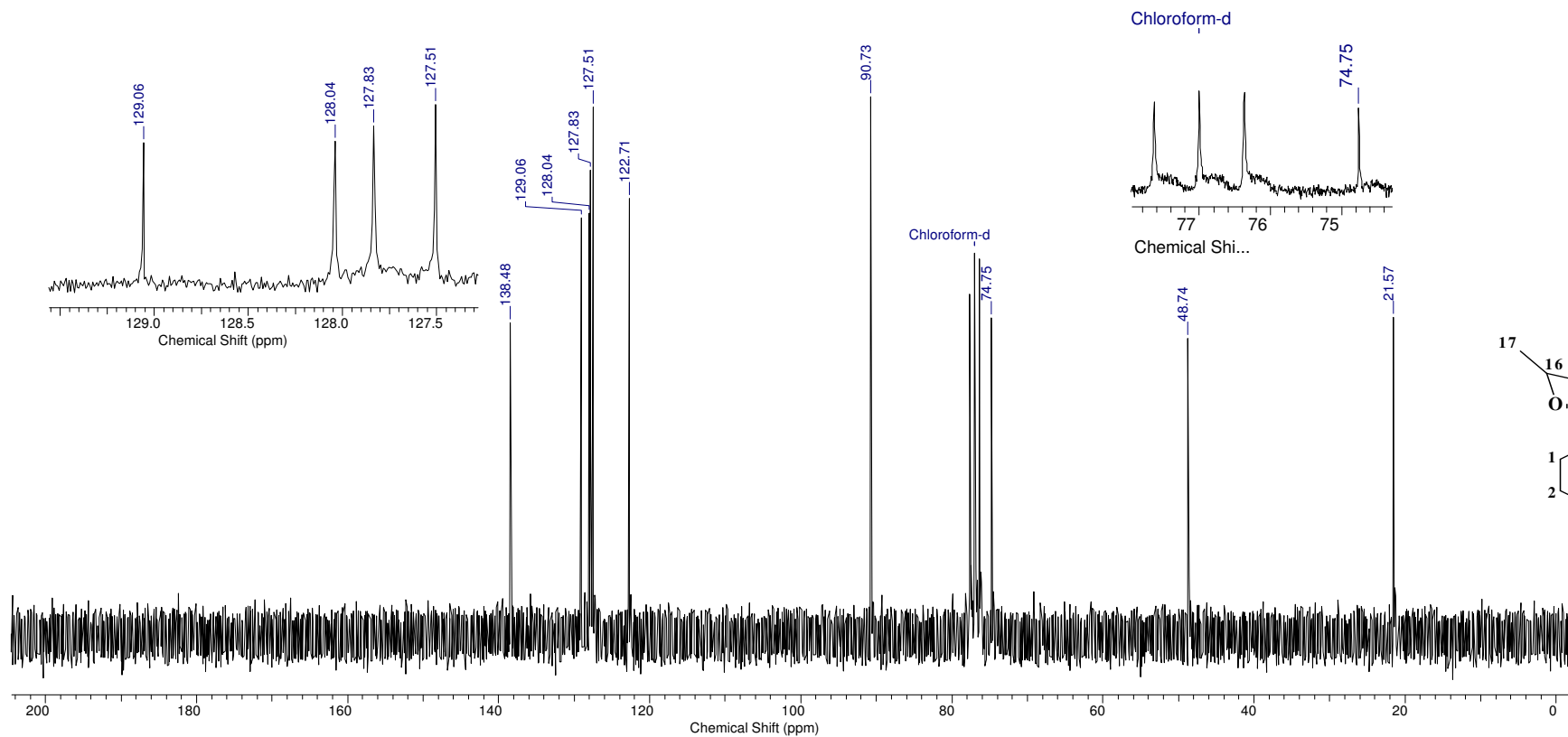
Espectro 71: E.M. do composto **75**.



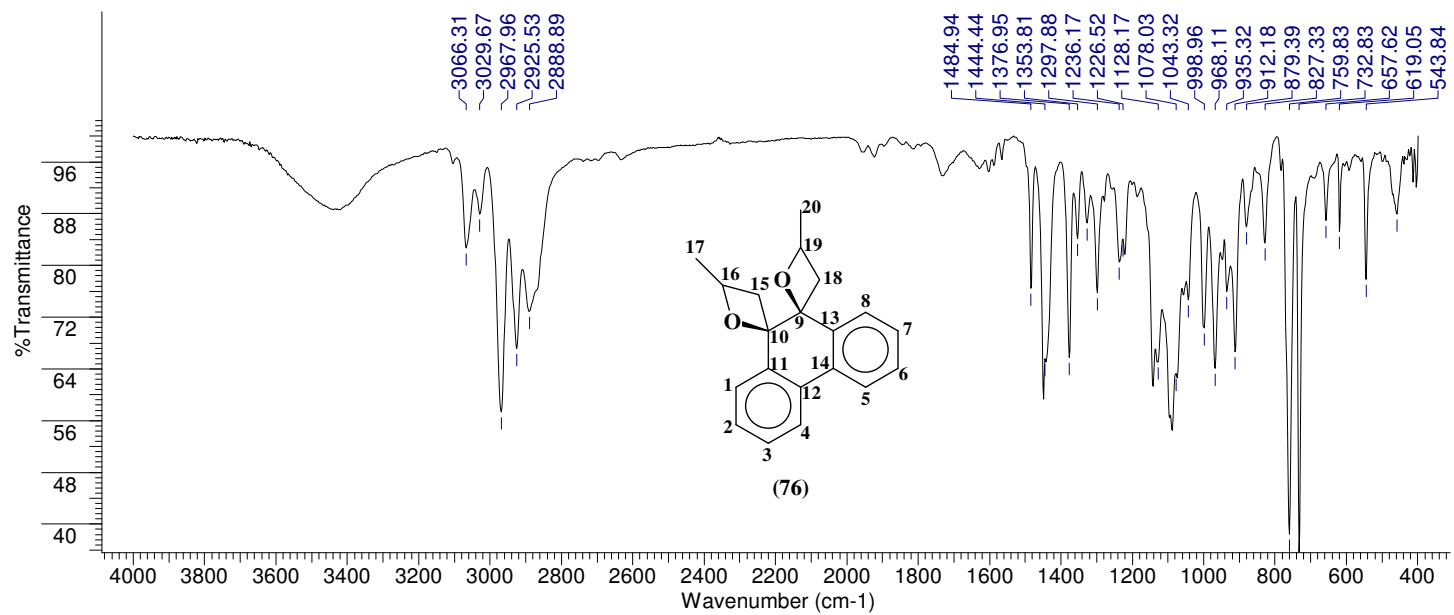
Espectro 72: RMN ^1H do composto 75.



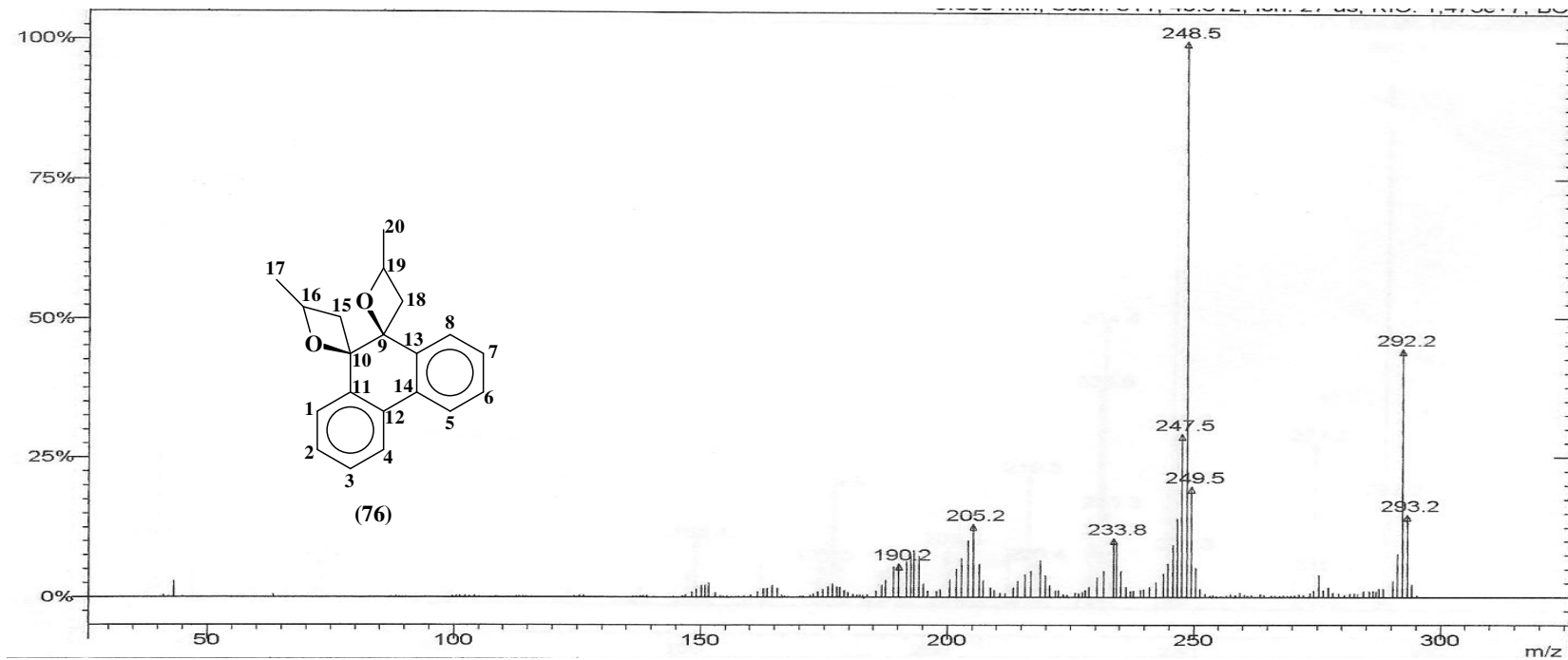
Espectro 73: RMN H x H COSY do composto **75**.



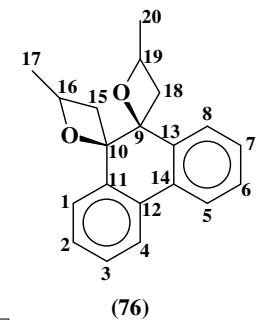
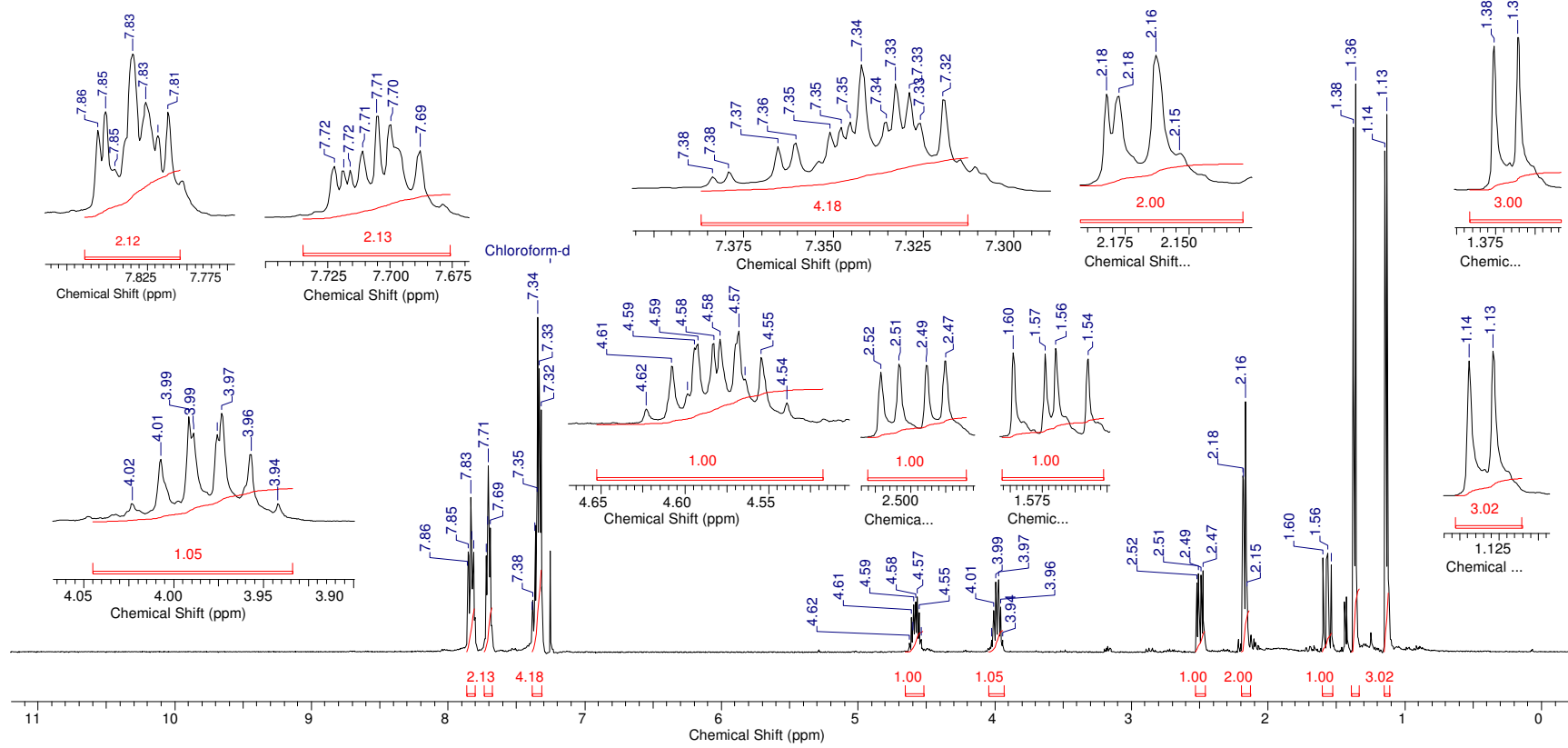
Espectro 74: RMN ^{13}C do composto **75**.



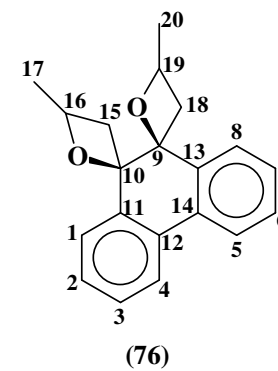
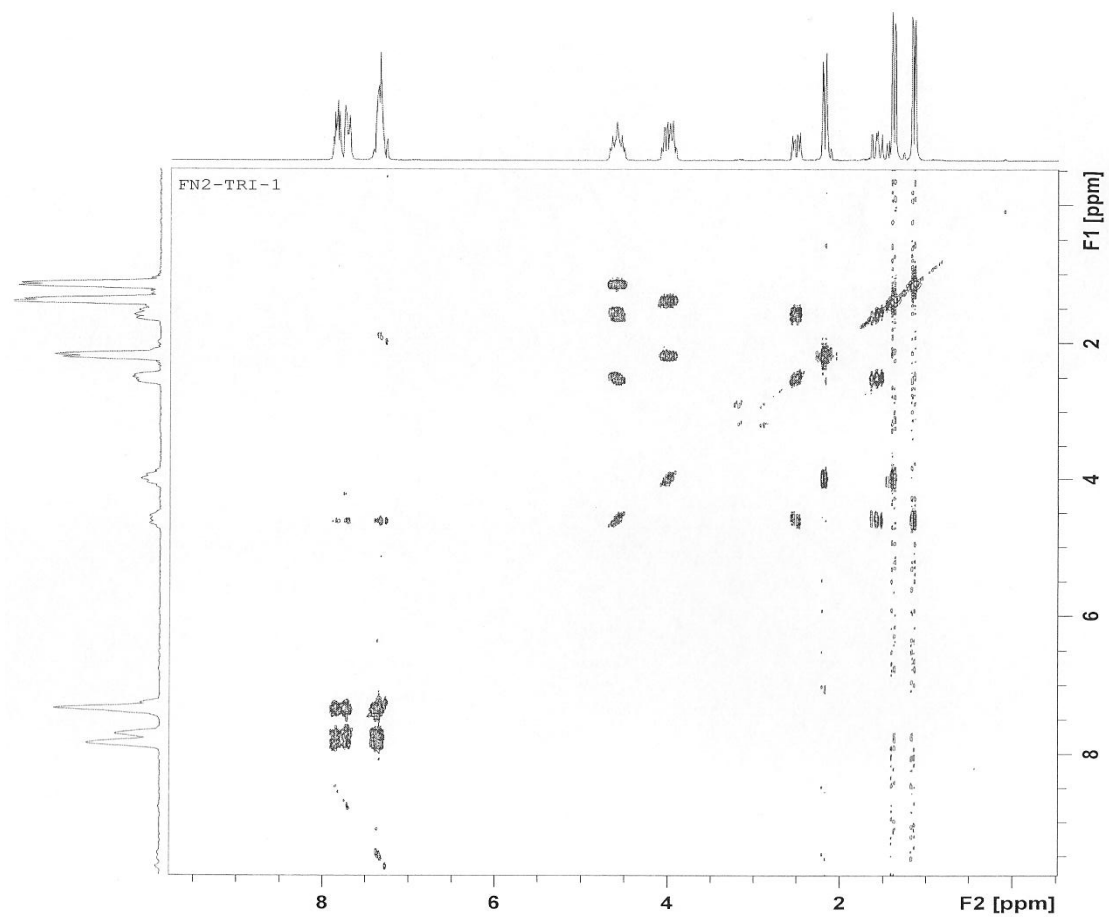
Espectro 75: IV do composto **76**.



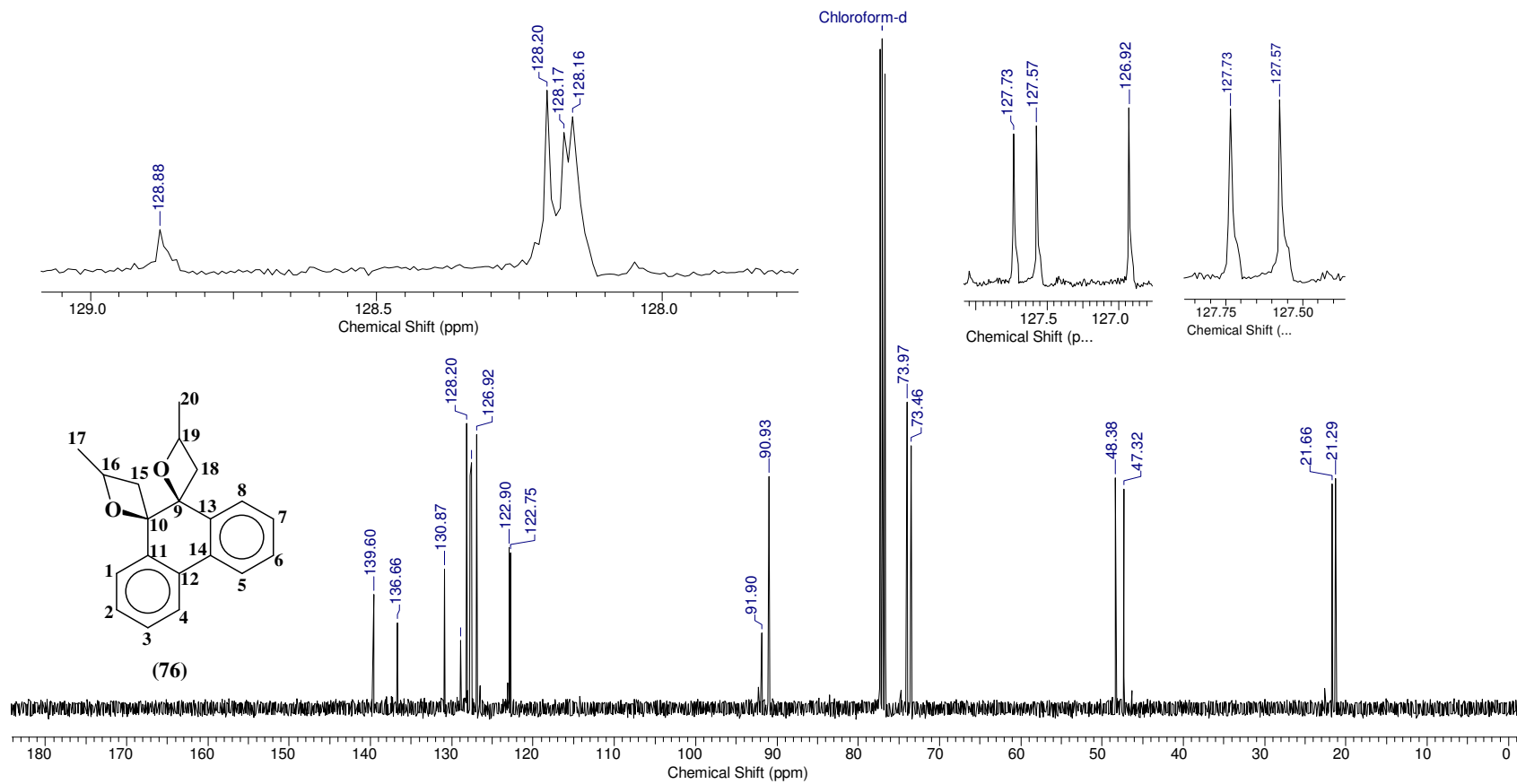
Espectro 76: E.M. do composto **76**.



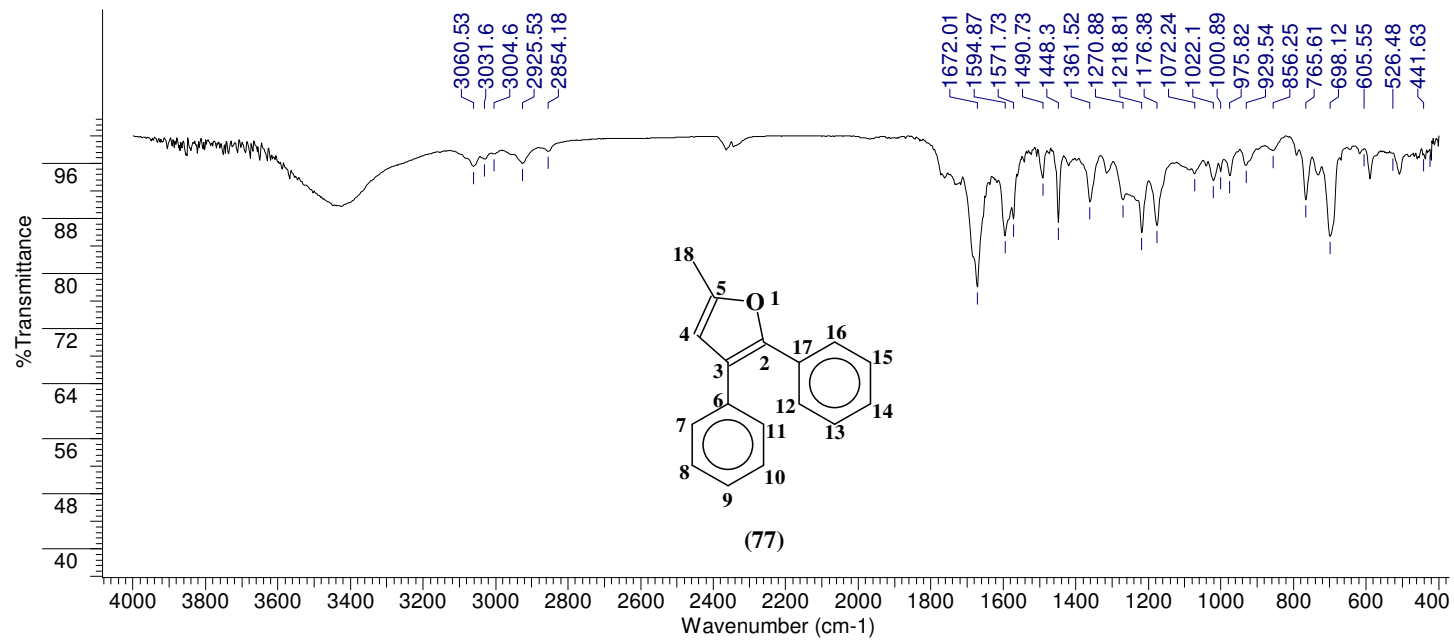
Espectro 77: RMN ¹H do composto 76.



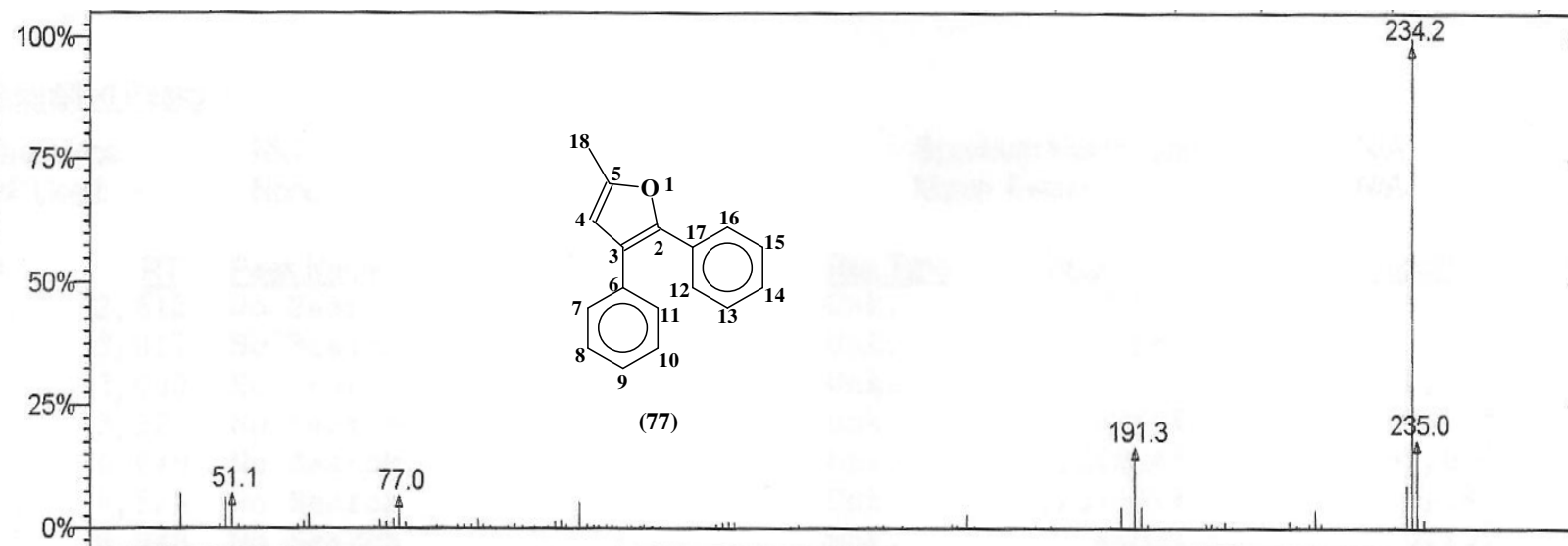
Espectro 78: RMN H x H COSY do composto **76**.



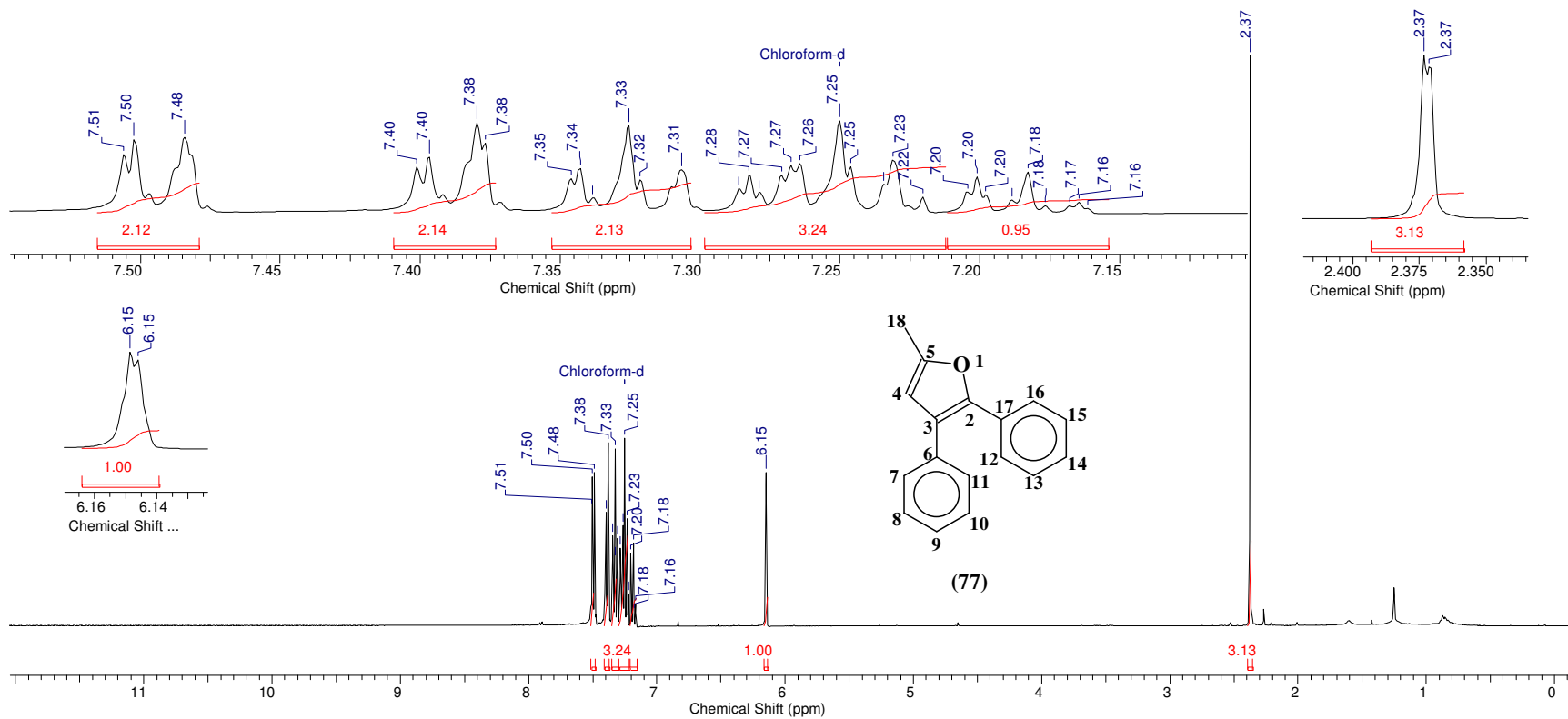
Espectro 79: RMN ^{13}C do composto **76**.



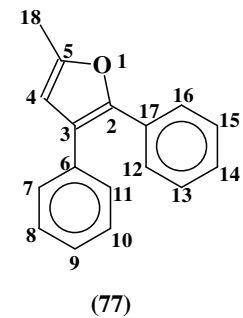
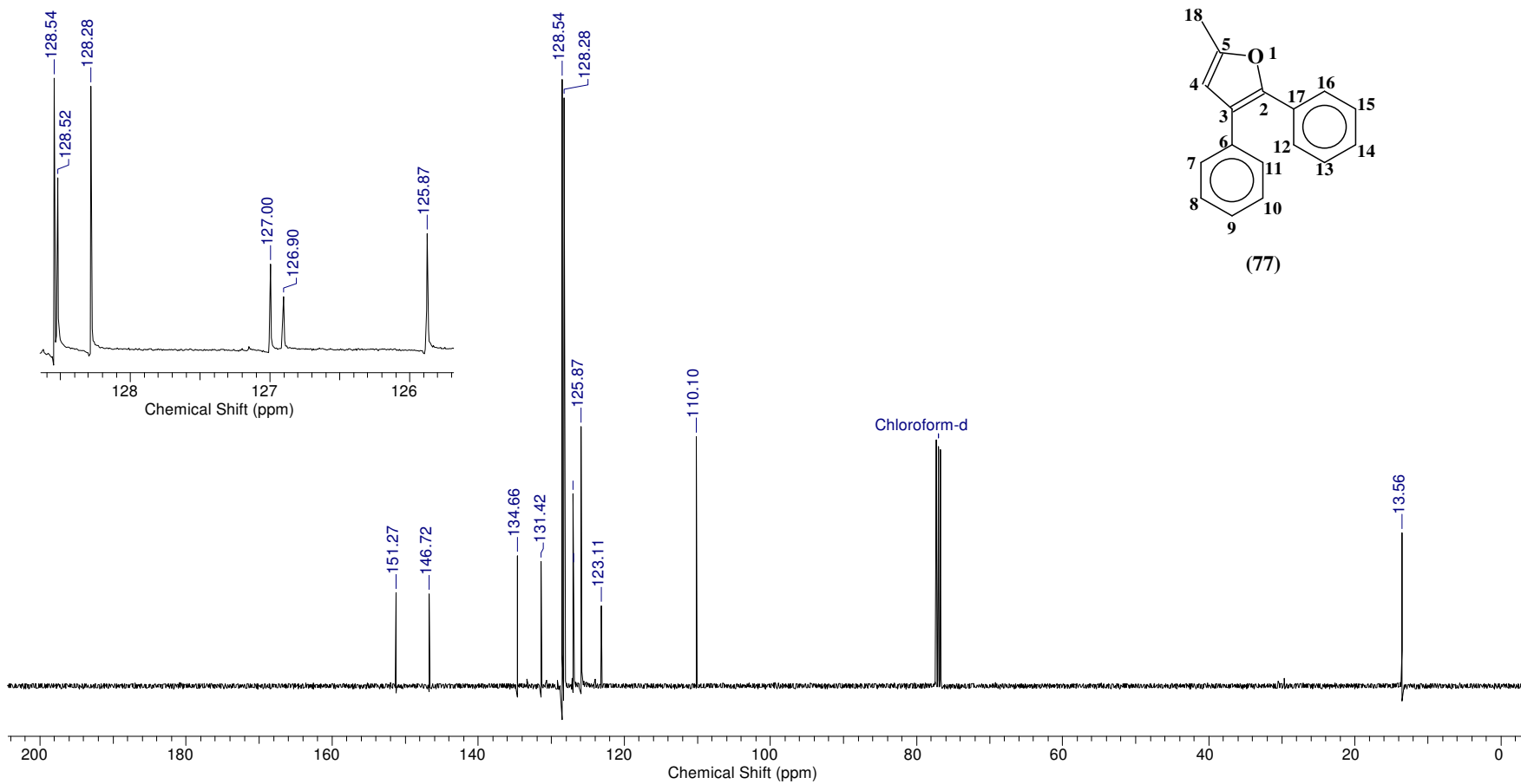
Espectro 80: IV do composto **77**.



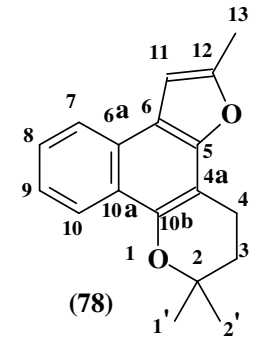
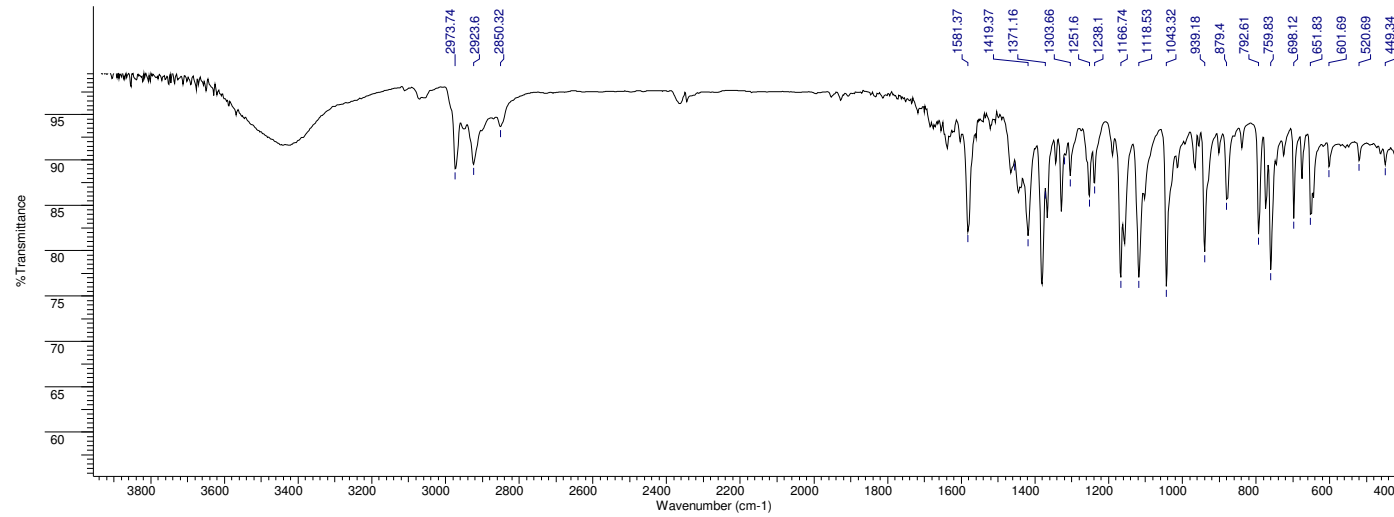
Espectro 81: E.M. do composto **77**.



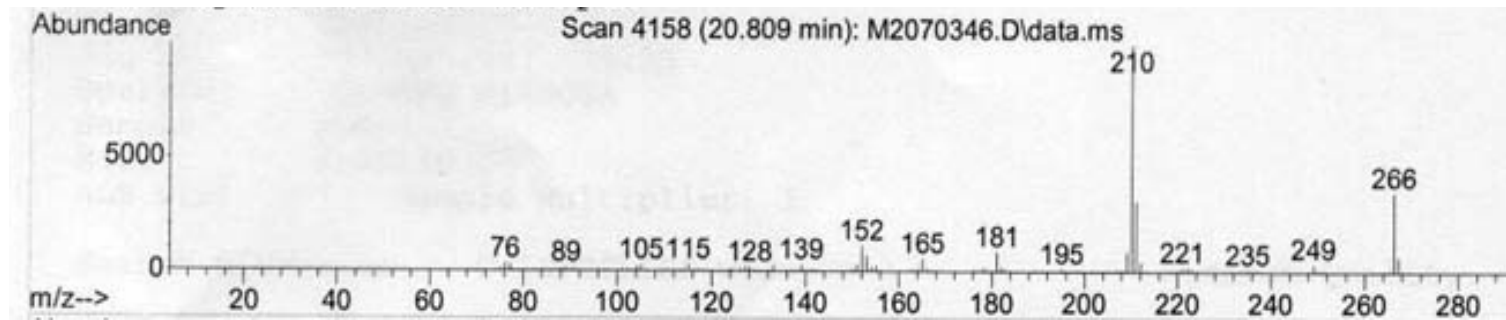
Espectro 82: RMN ^1H do composto **77**.



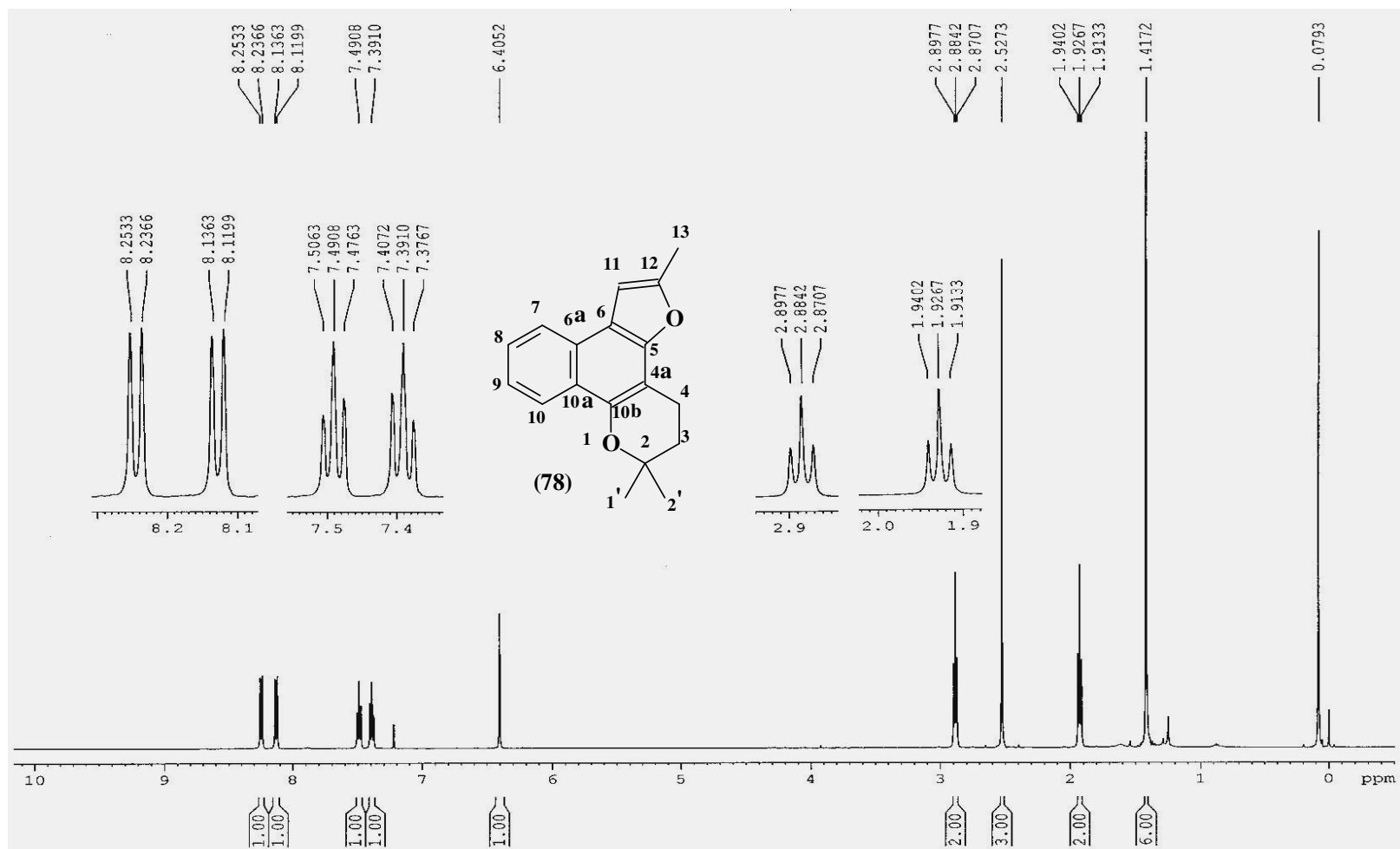
Espectro 83: RMN ^{13}C do composto 77.



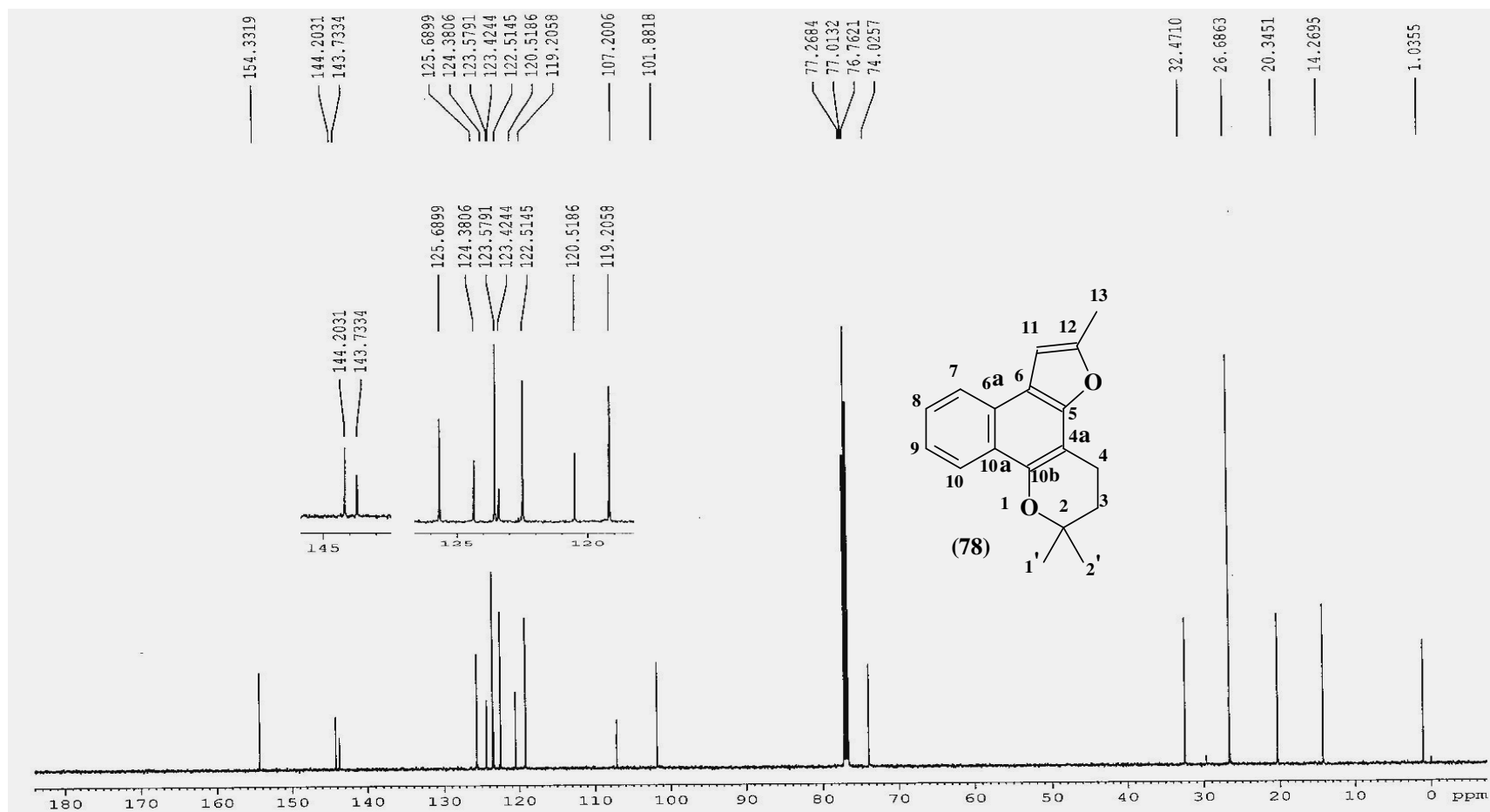
Espectro 84: IV do composto **78**.



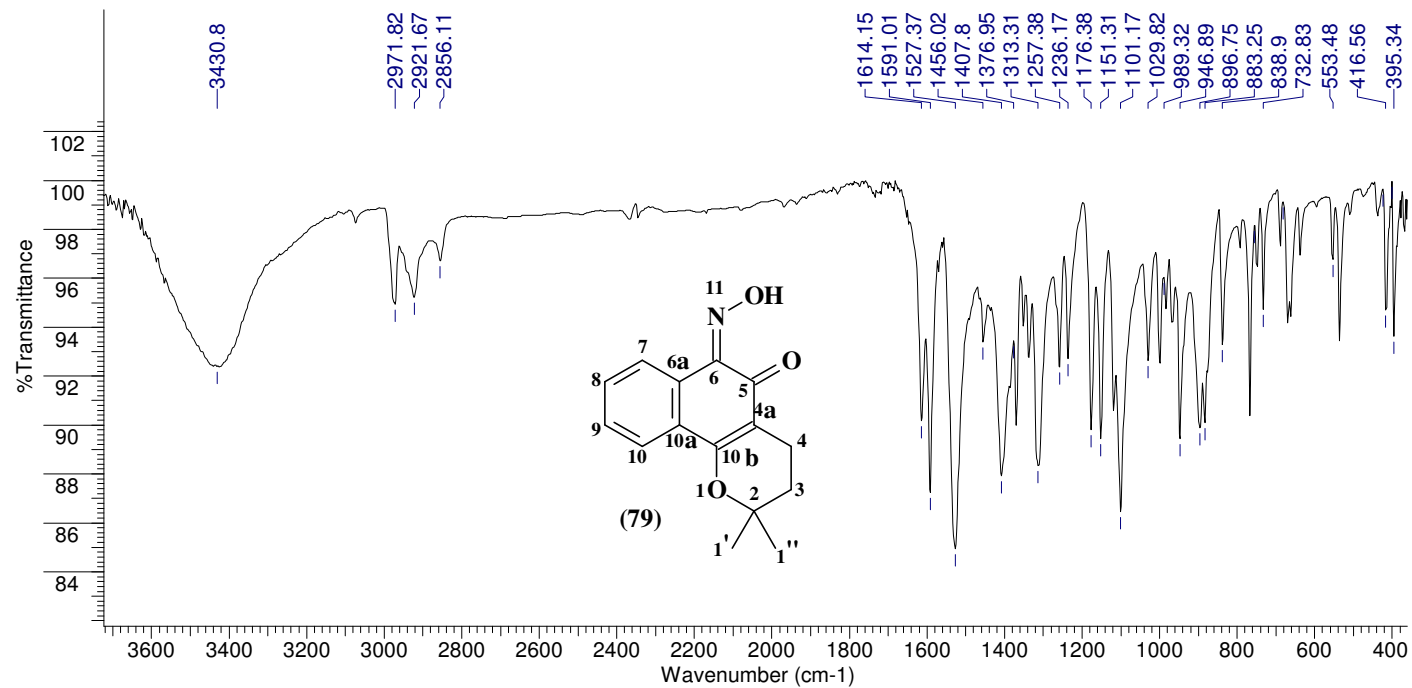
Espectro 85: E.M. do composto **78**.



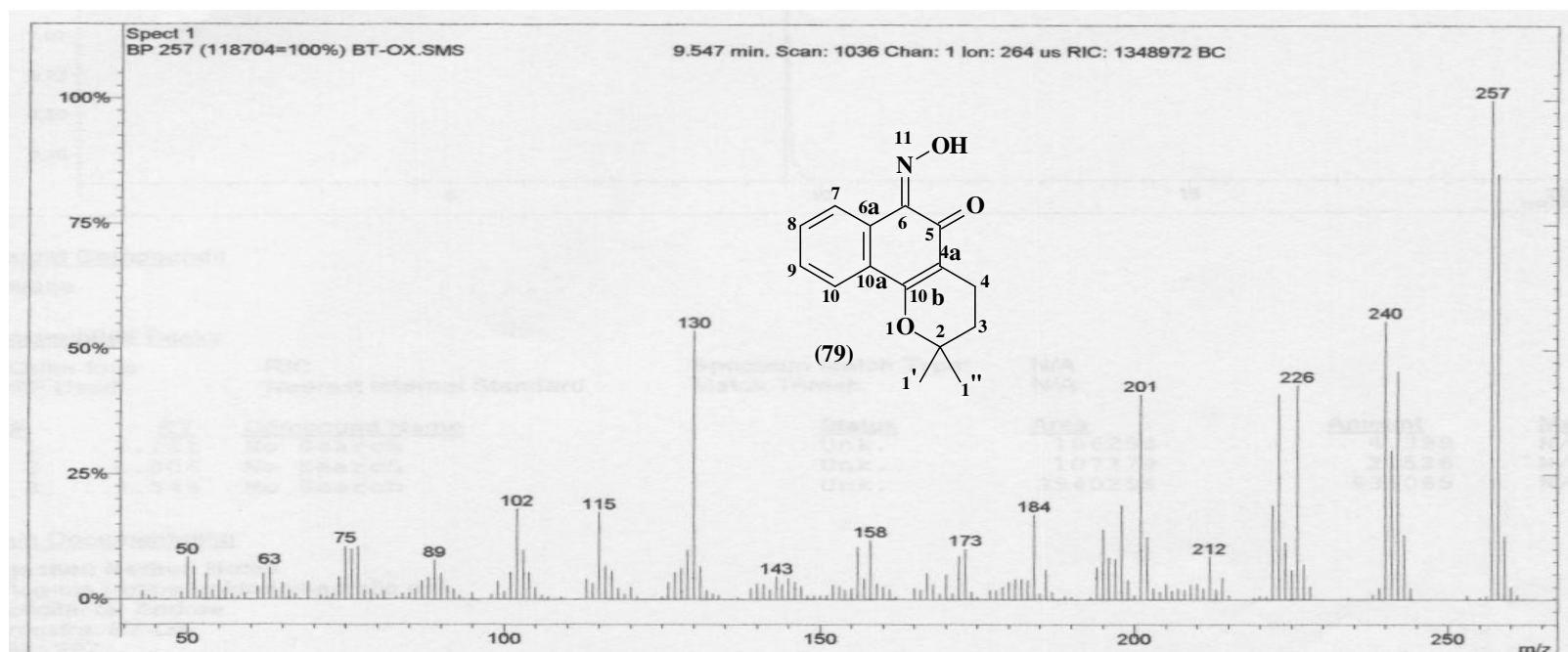
Espectro 86: RMN de ^1H do composto 78.



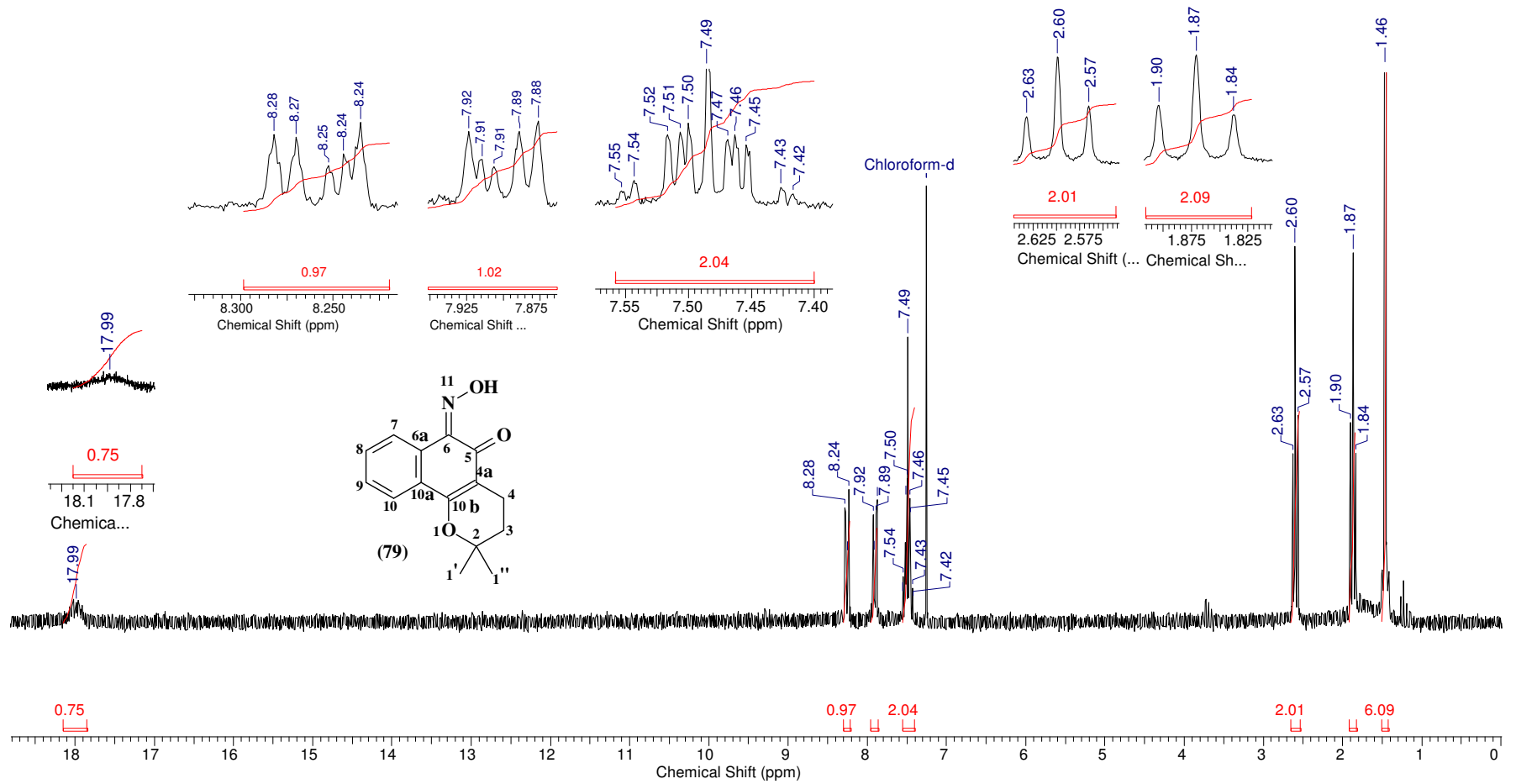
Espectro 87: RMN de ^{13}C do composto **78**.



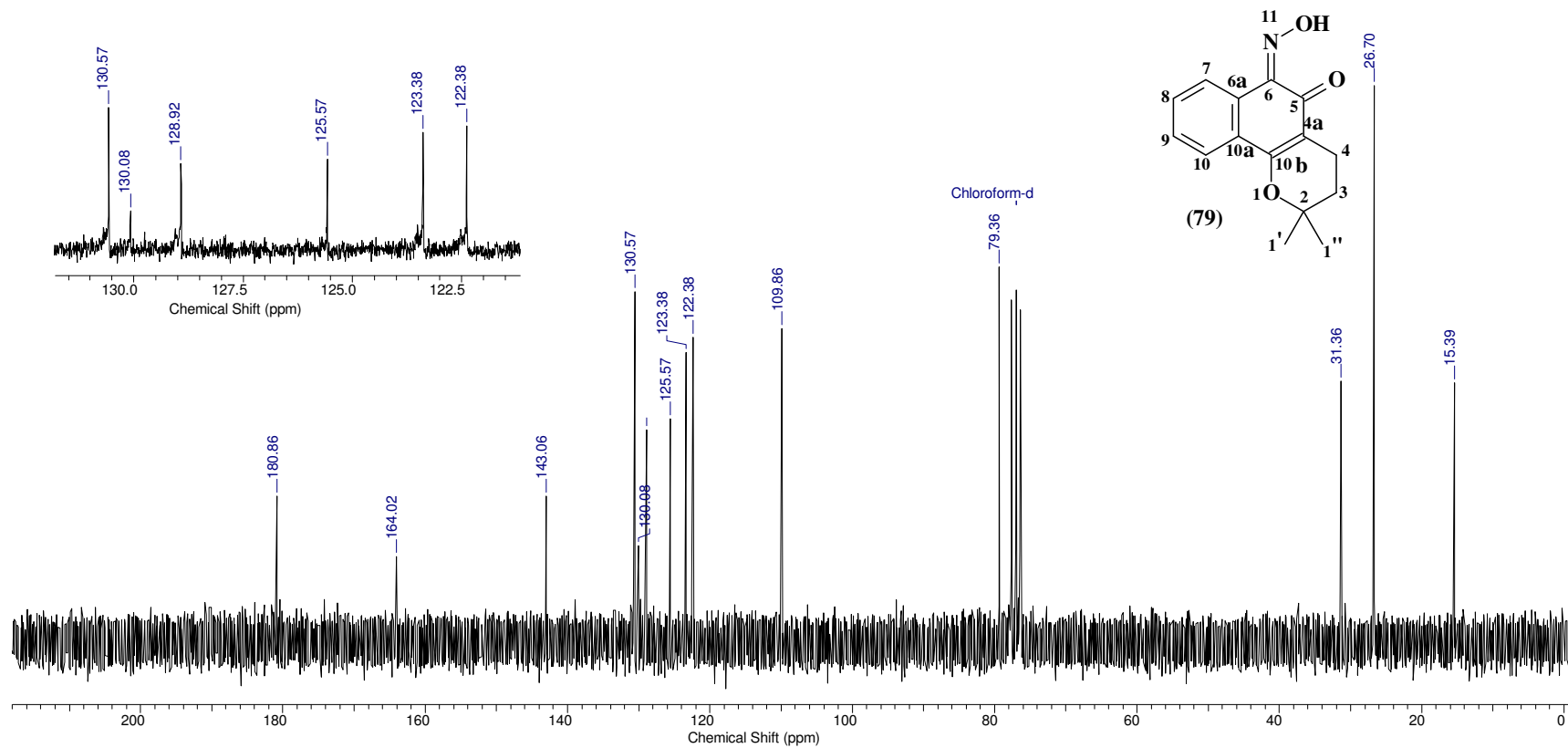
Espectro 88: IV do composto **79**.



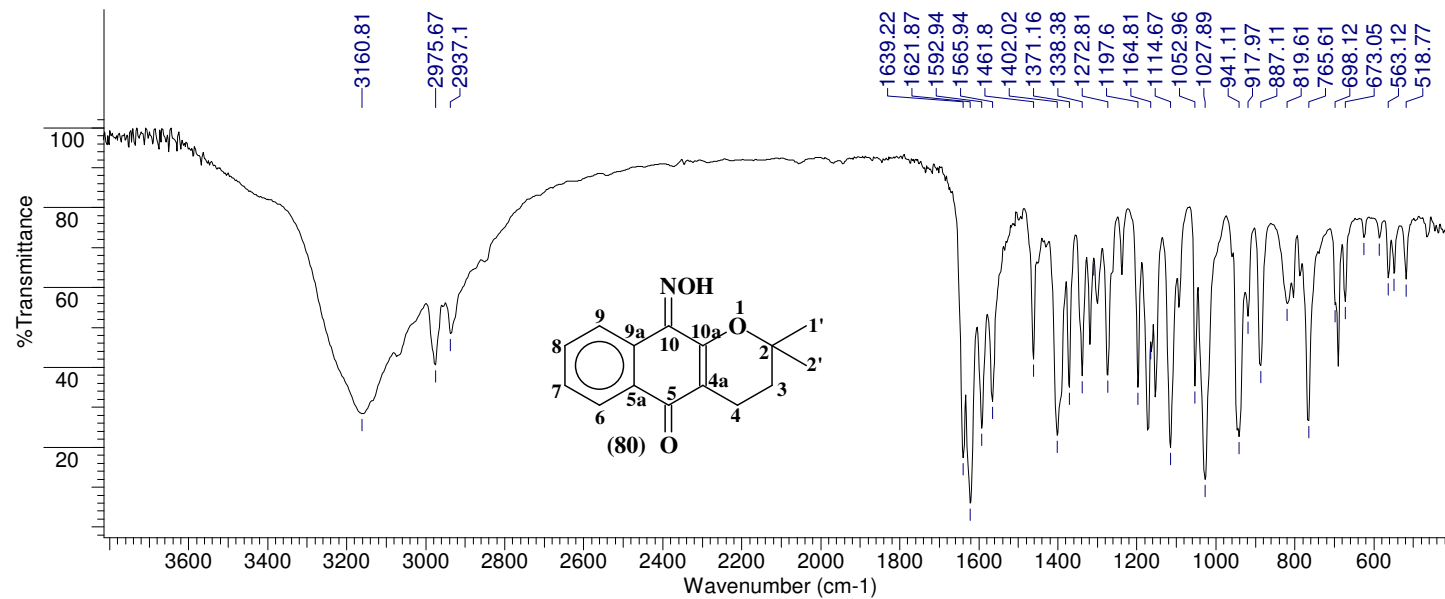
Espectro 89: E.M. do composto 79.



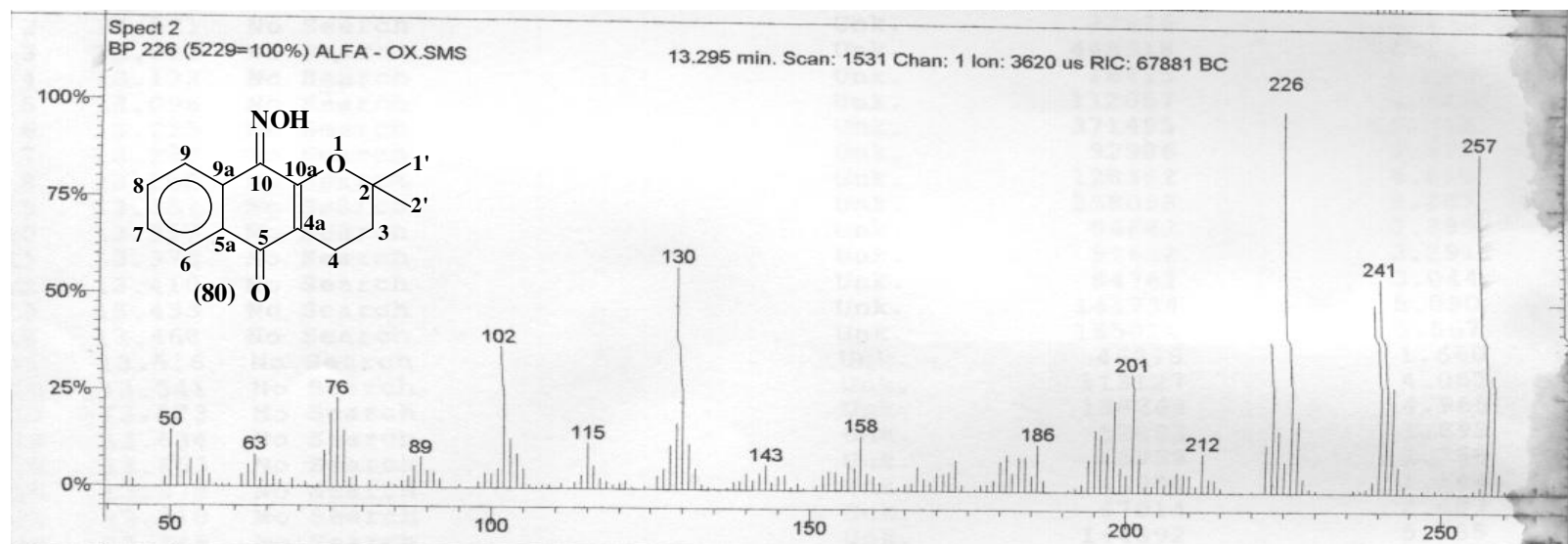
Espectro 90: RMN de ¹H do composto 79.



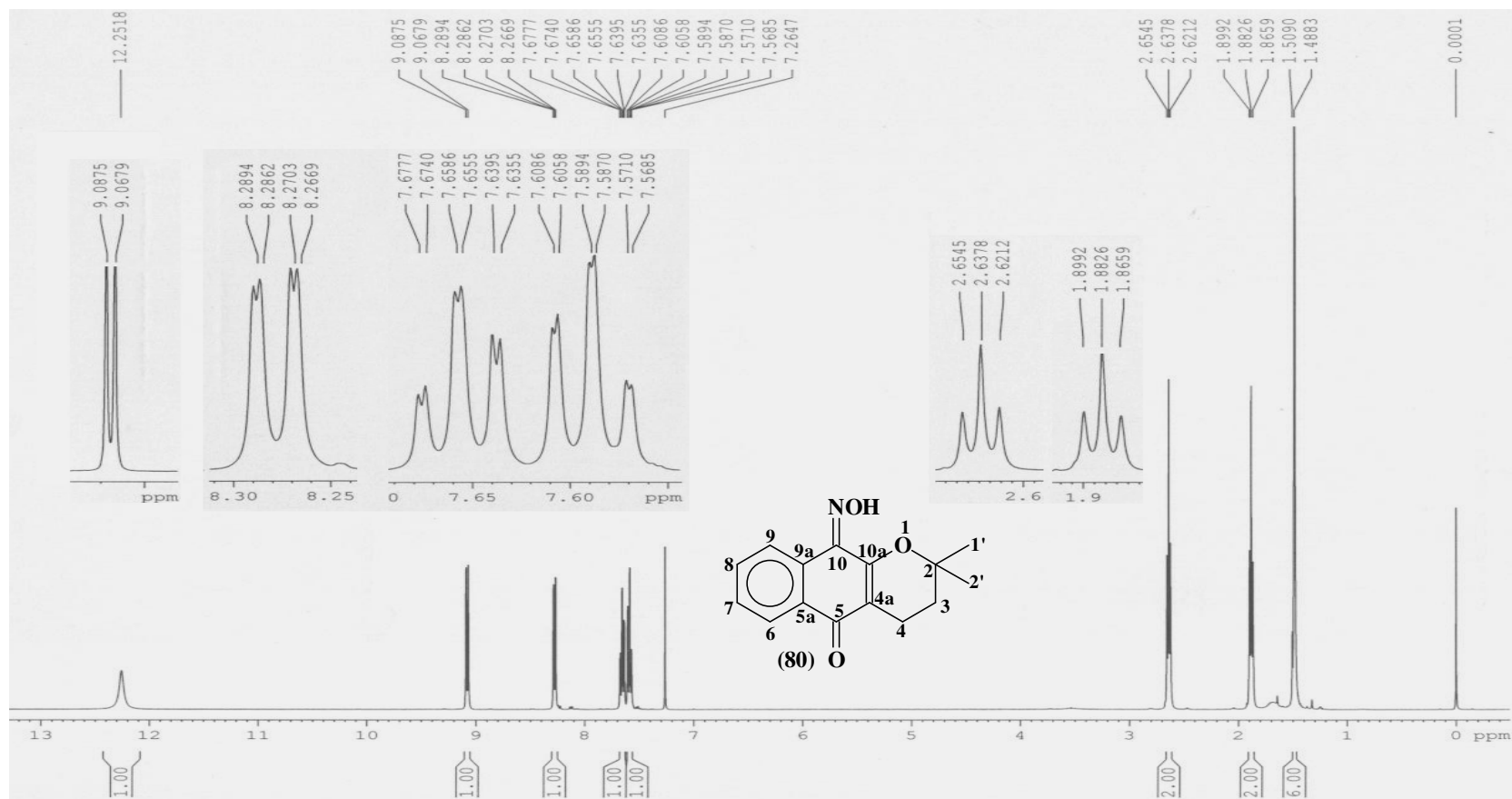
Espectro 91: RMN de ^{13}C do composto **79**.



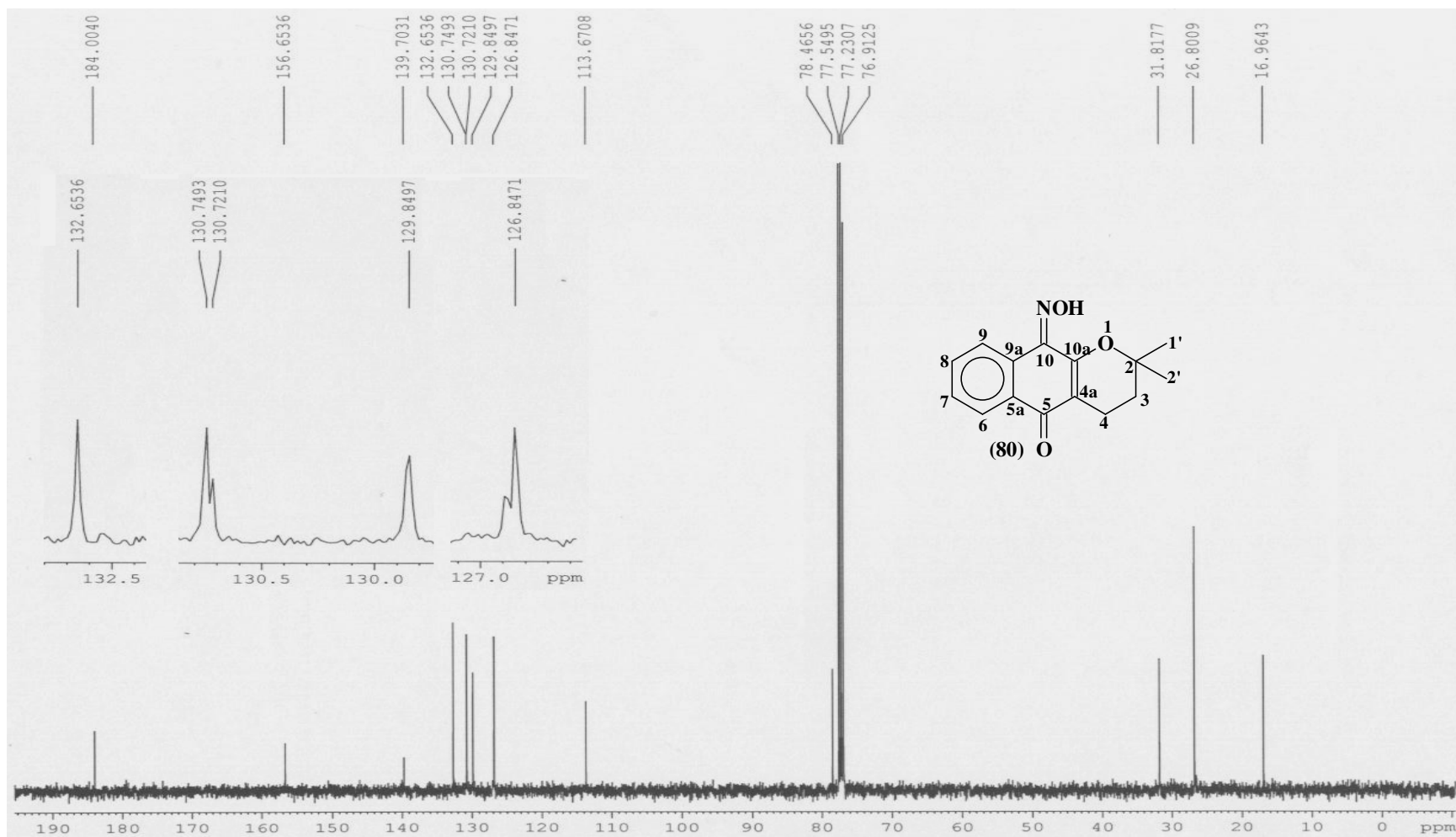
Espectro 92: IV do composto **80**.



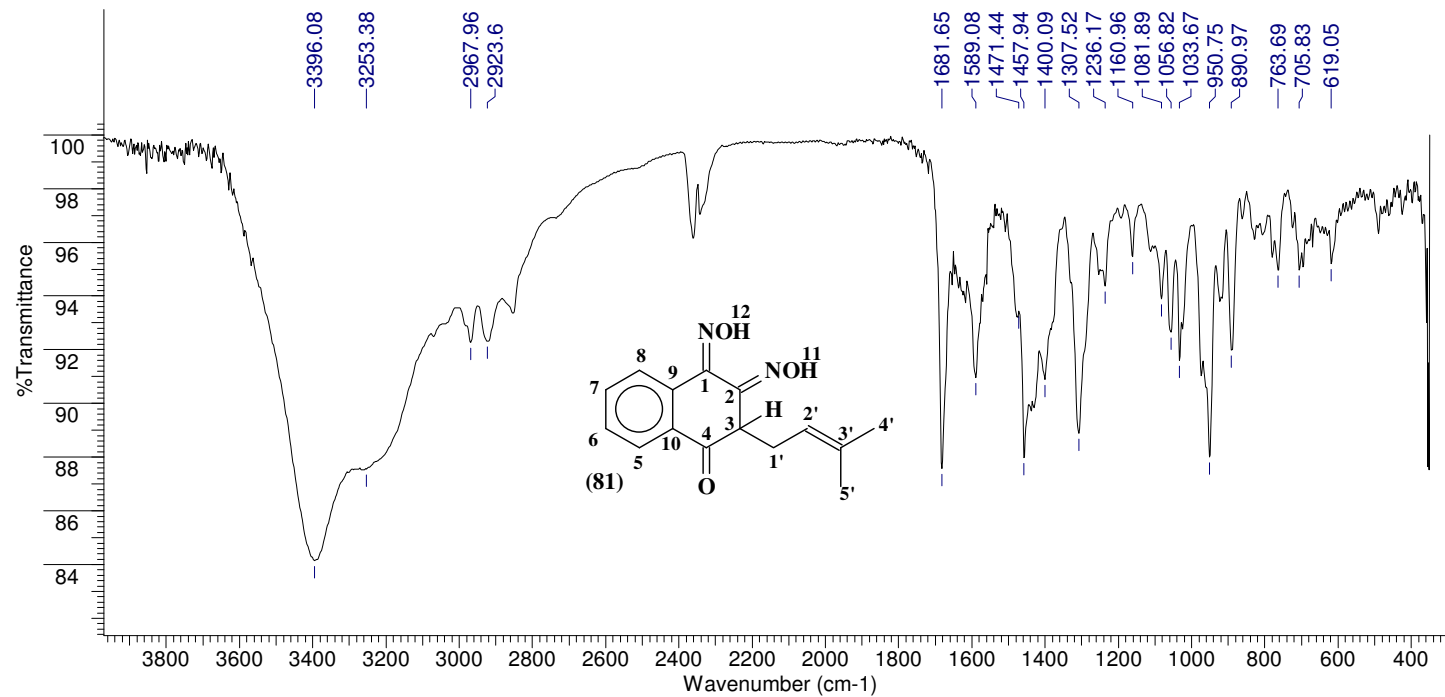
Espectro 93: E.M do composto **80**.



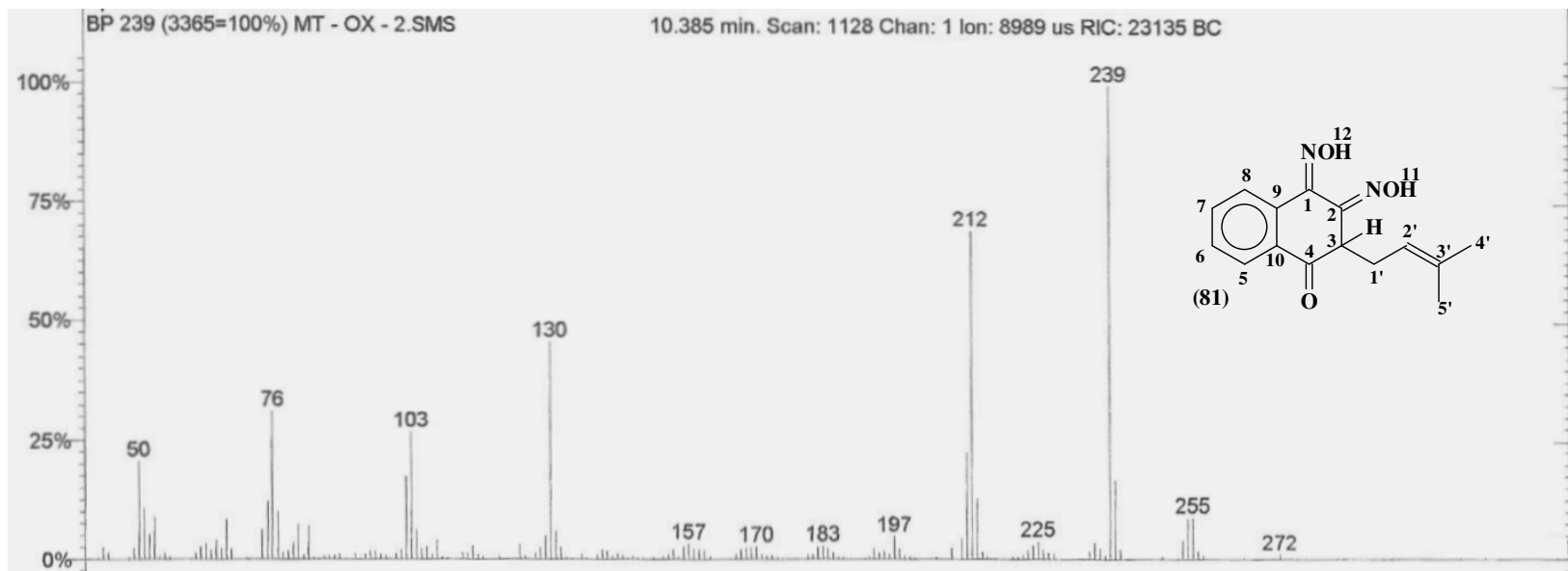
Espectro 94: RMN de ^1H do composto **80**.



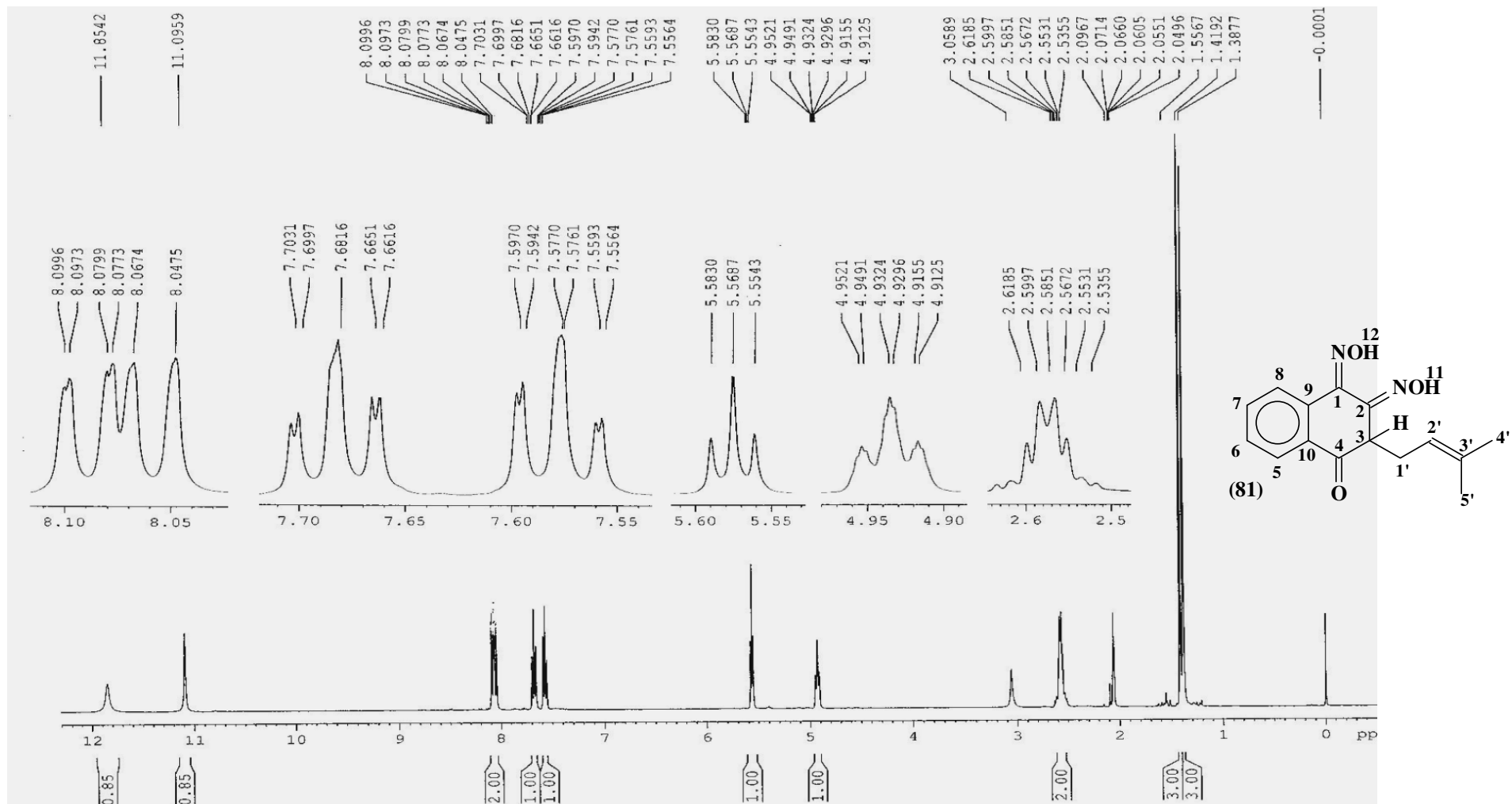
Espectro 95: RMN de ^{13}C do composto **80**.



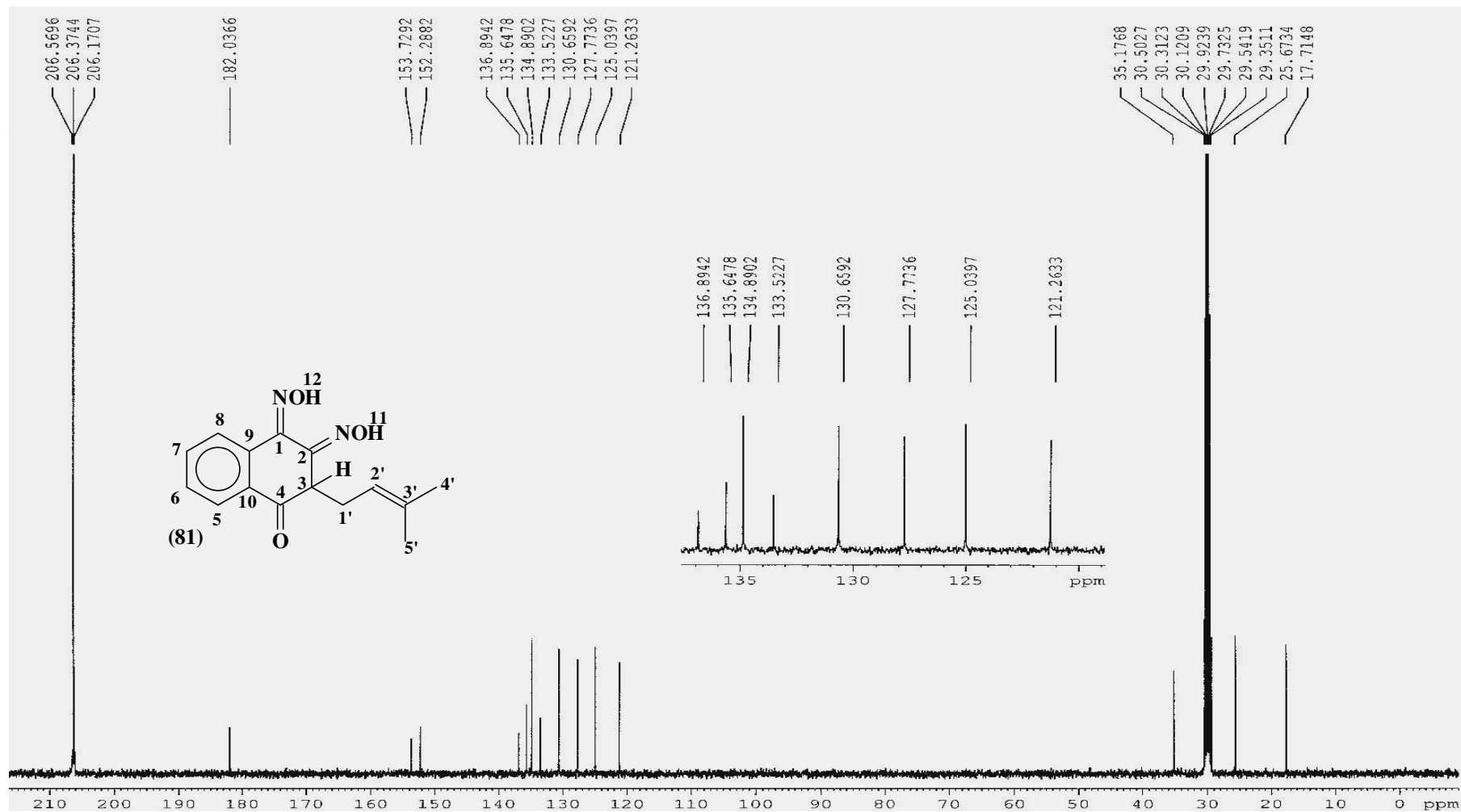
Espectro 96: IV do composto 81.



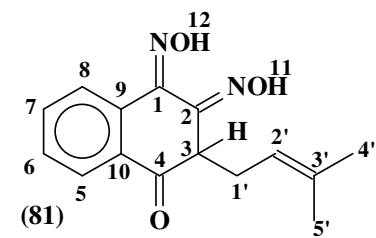
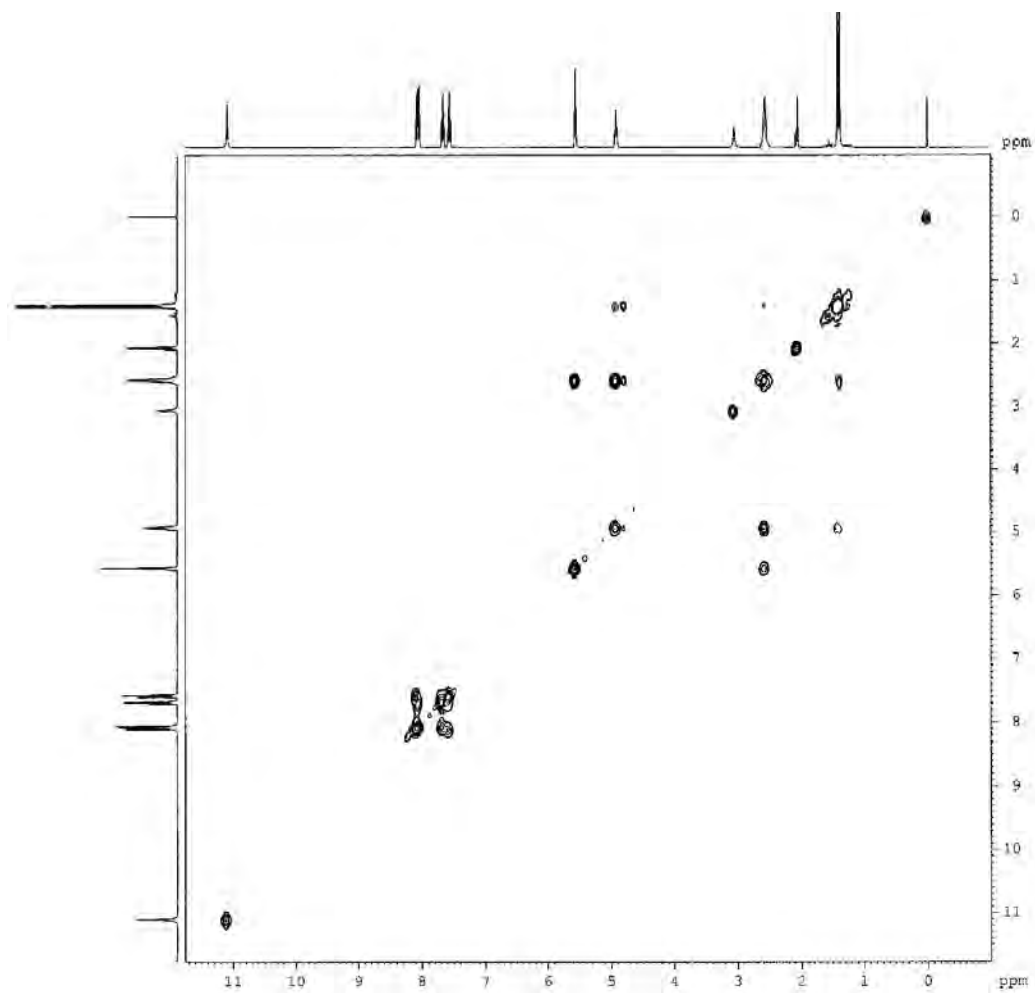
Espectro 97: E.M. do composto **81**.



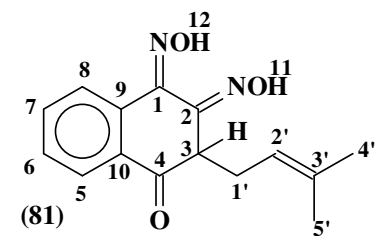
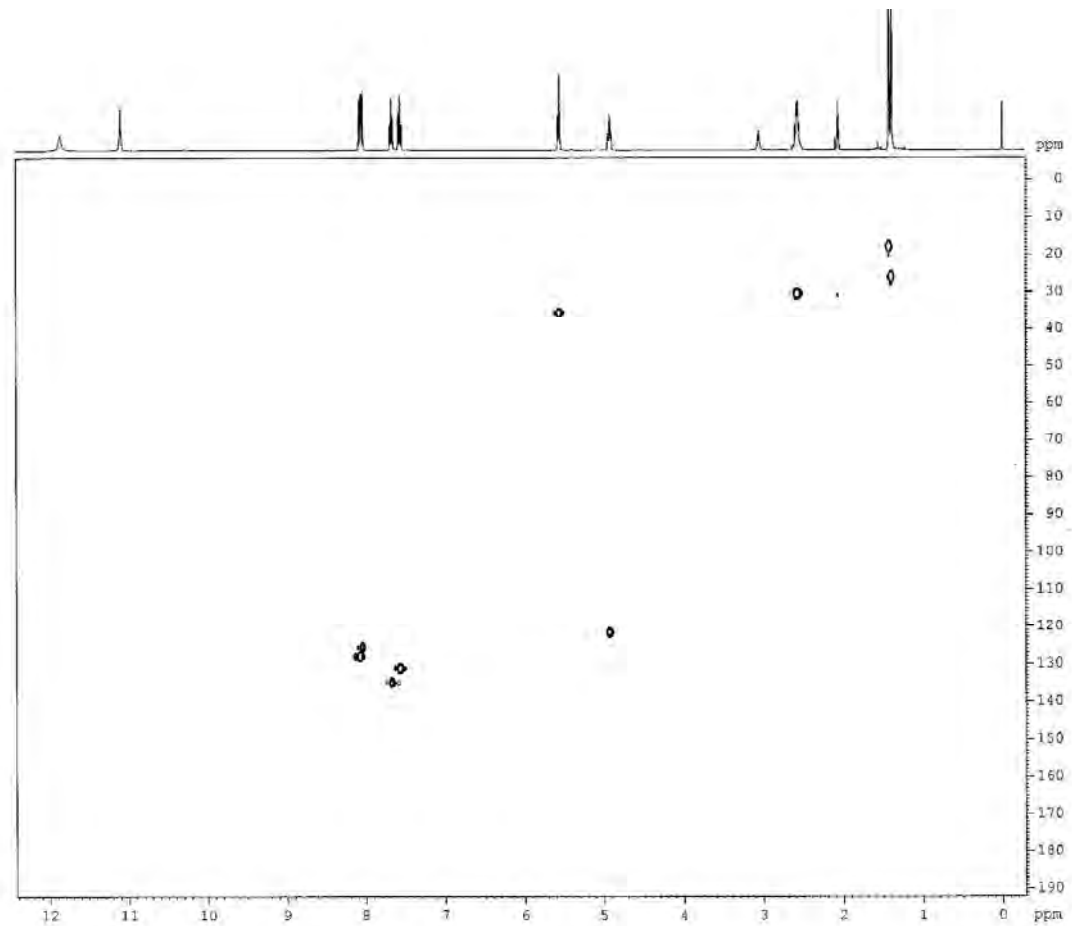
Espectro 98: RMN de ^1H do composto **81**.



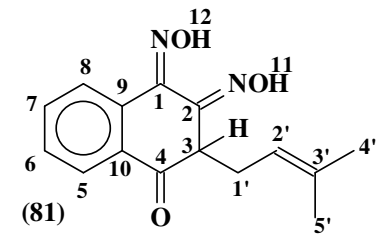
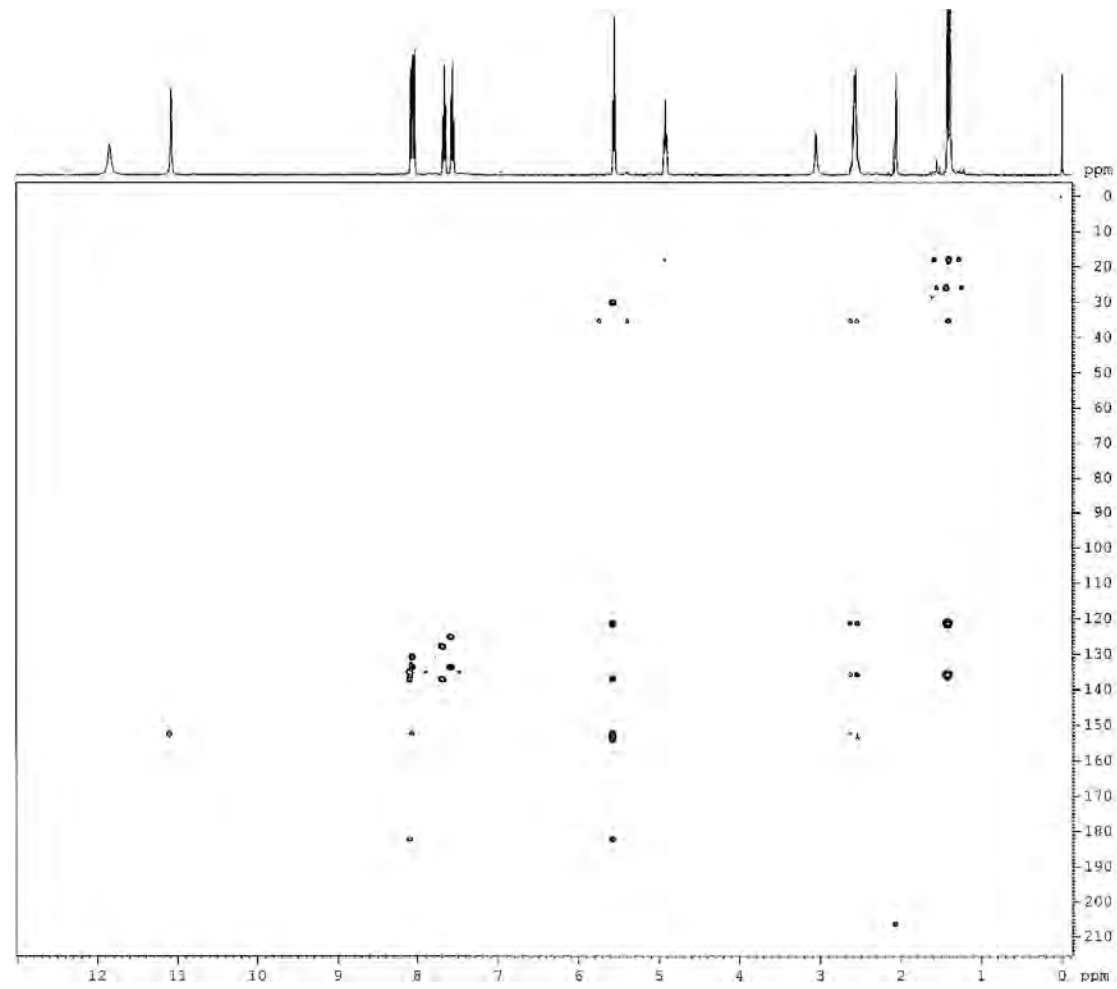
Espectro 99: RMN de ^{13}C do composto 81.



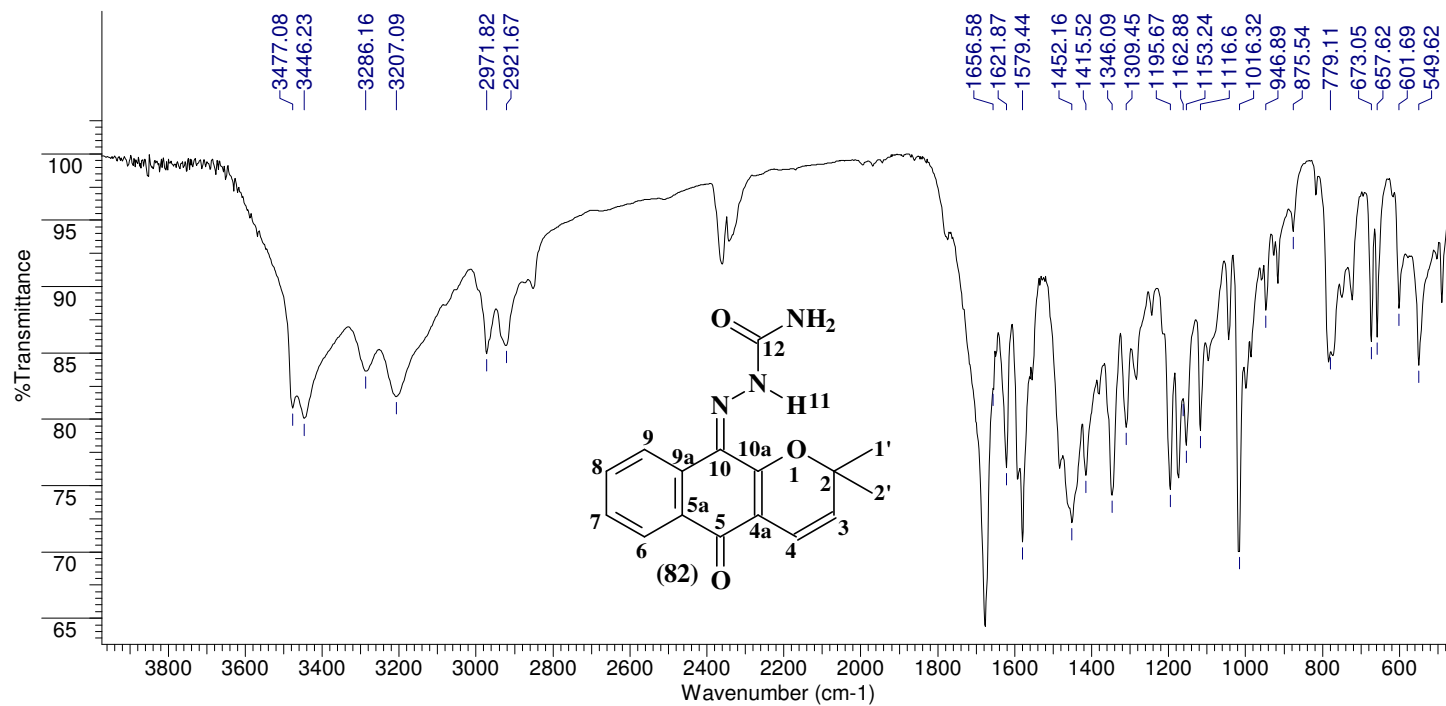
Espectro 100: RMN H x H COSY do composto **81**.



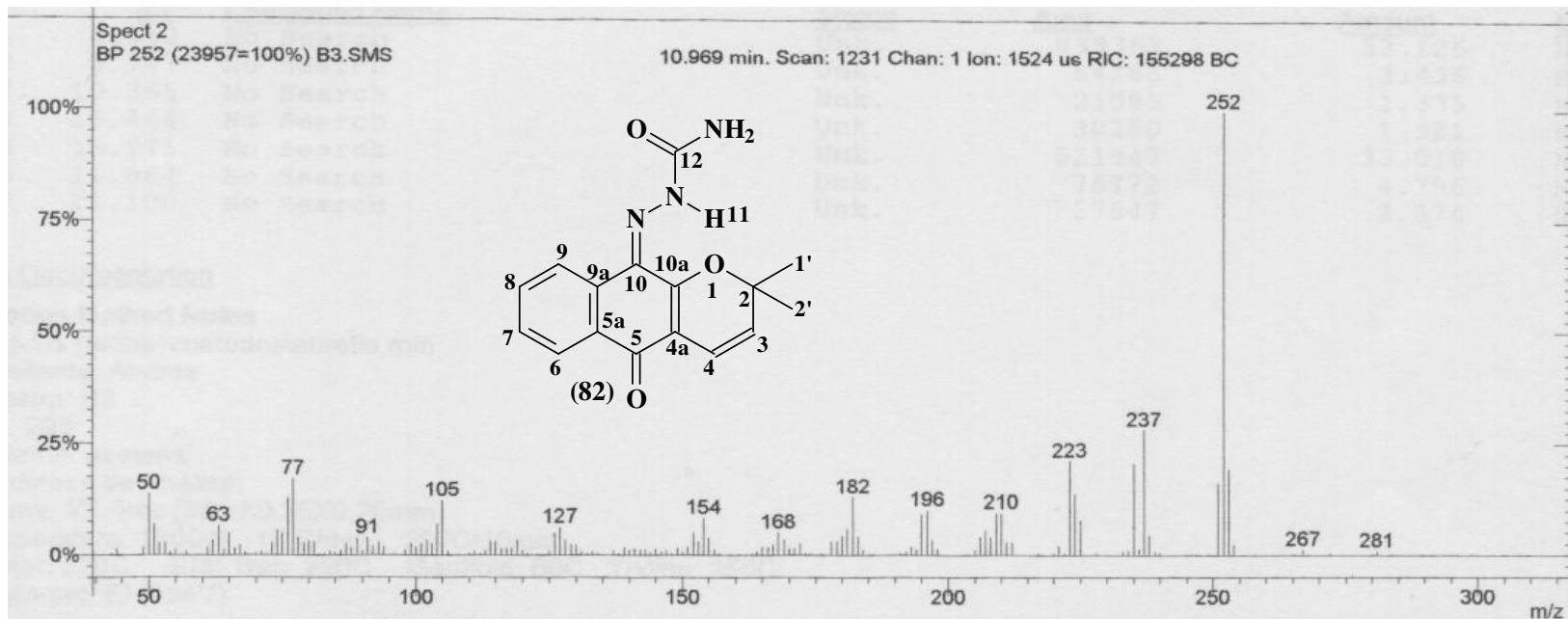
Espectro 101: RMN HET-COSY (J^1) do composto **81**.



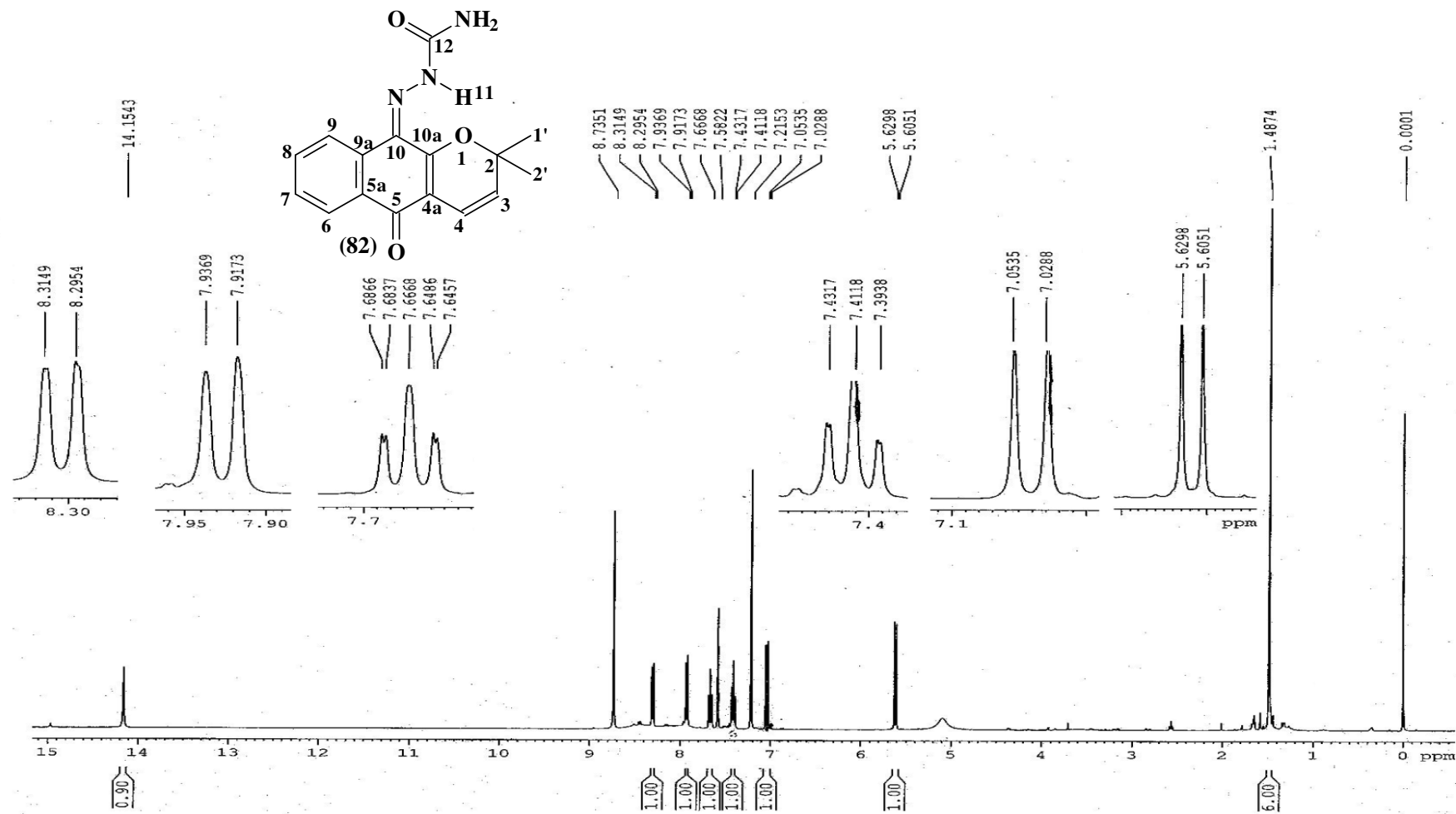
Espectro 102: RMN HET-COSY (J^2 e J^3) do composto **81**.



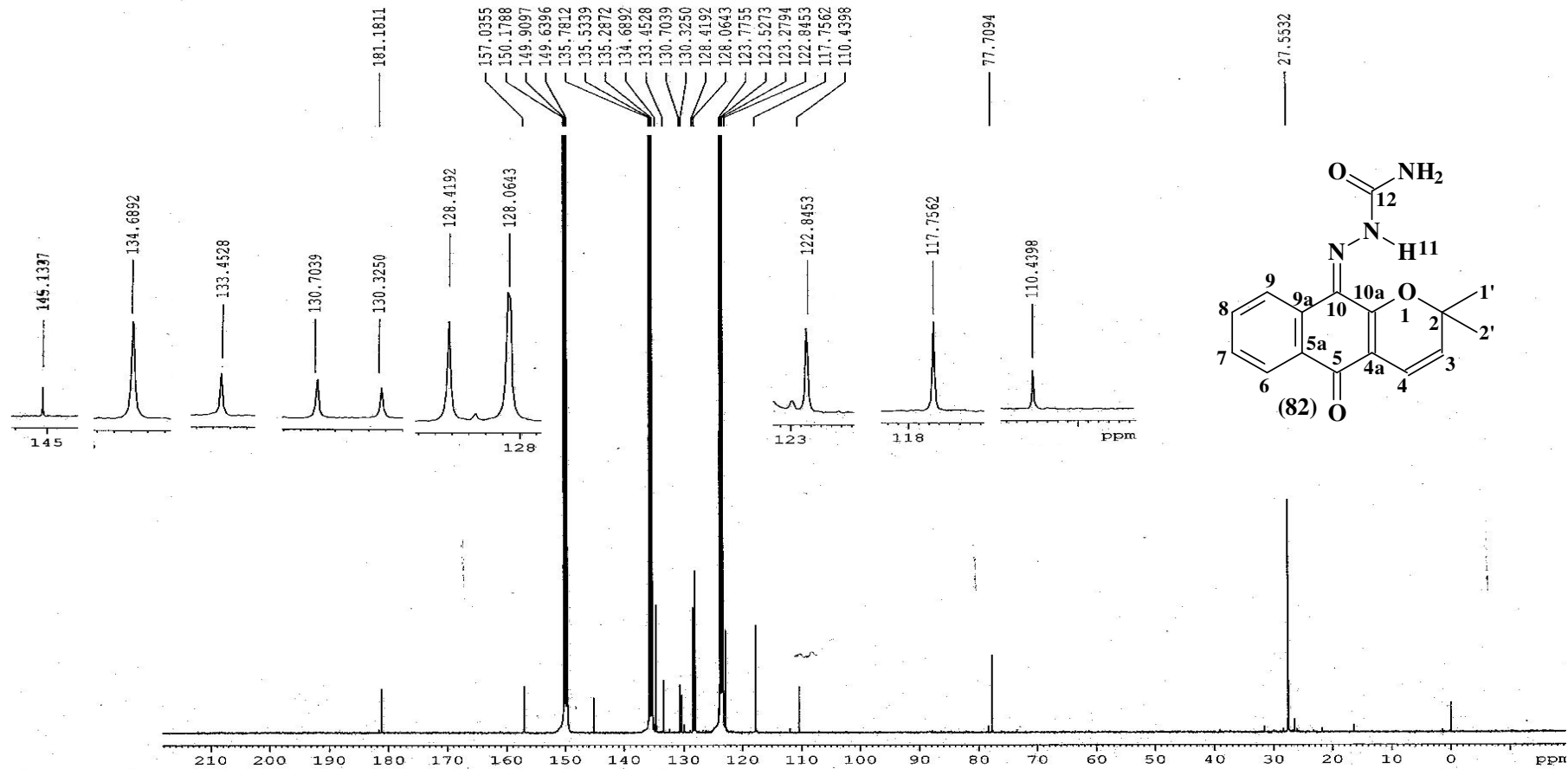
Espectro 103: IV do composto **82**.



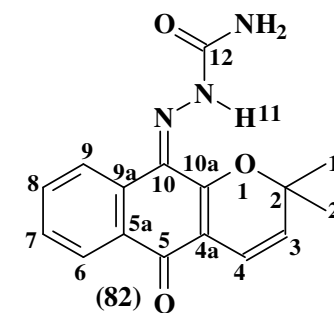
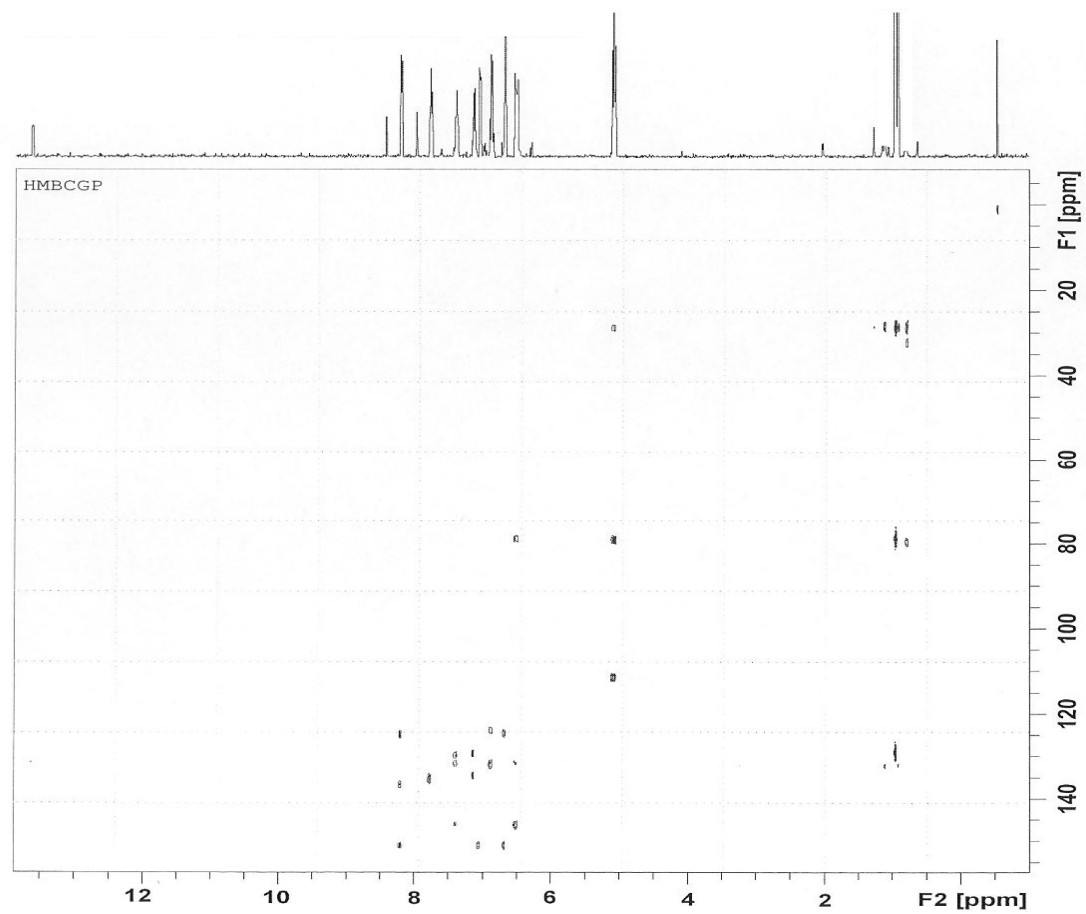
Espectro 104: E.M. do composto **82**.



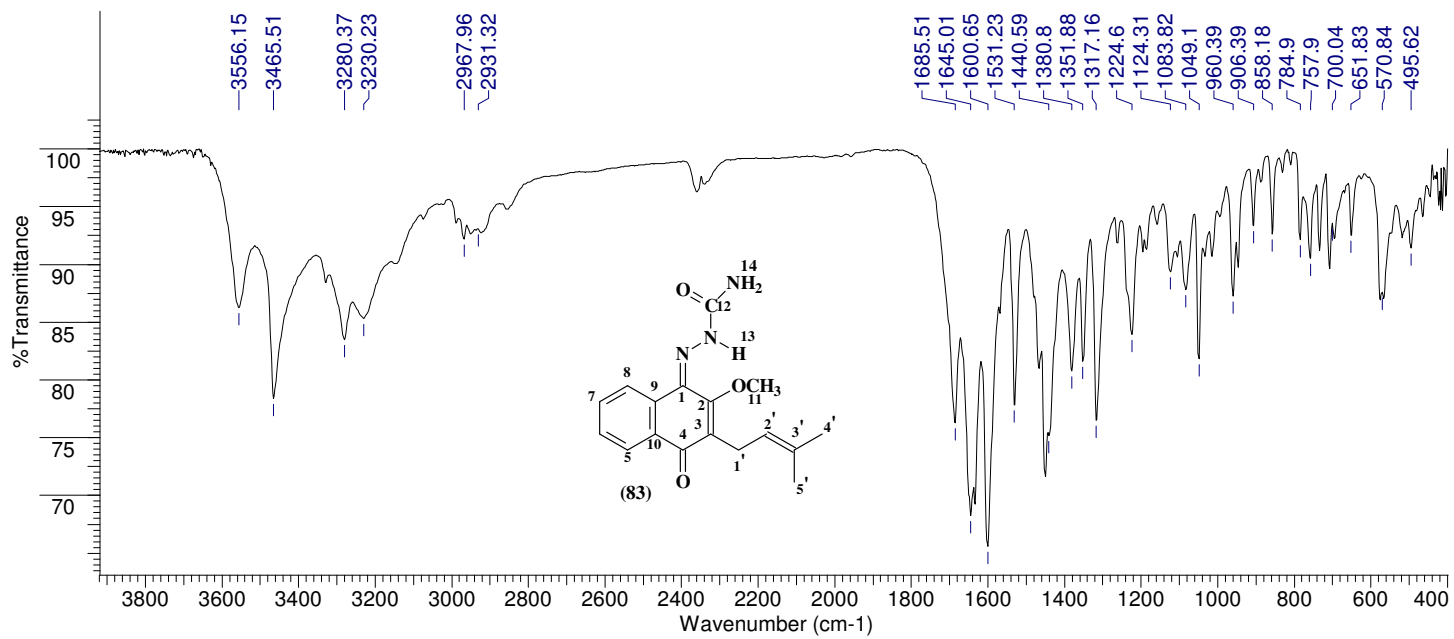
Espectro 105: RMN de ¹H do composto **82**.



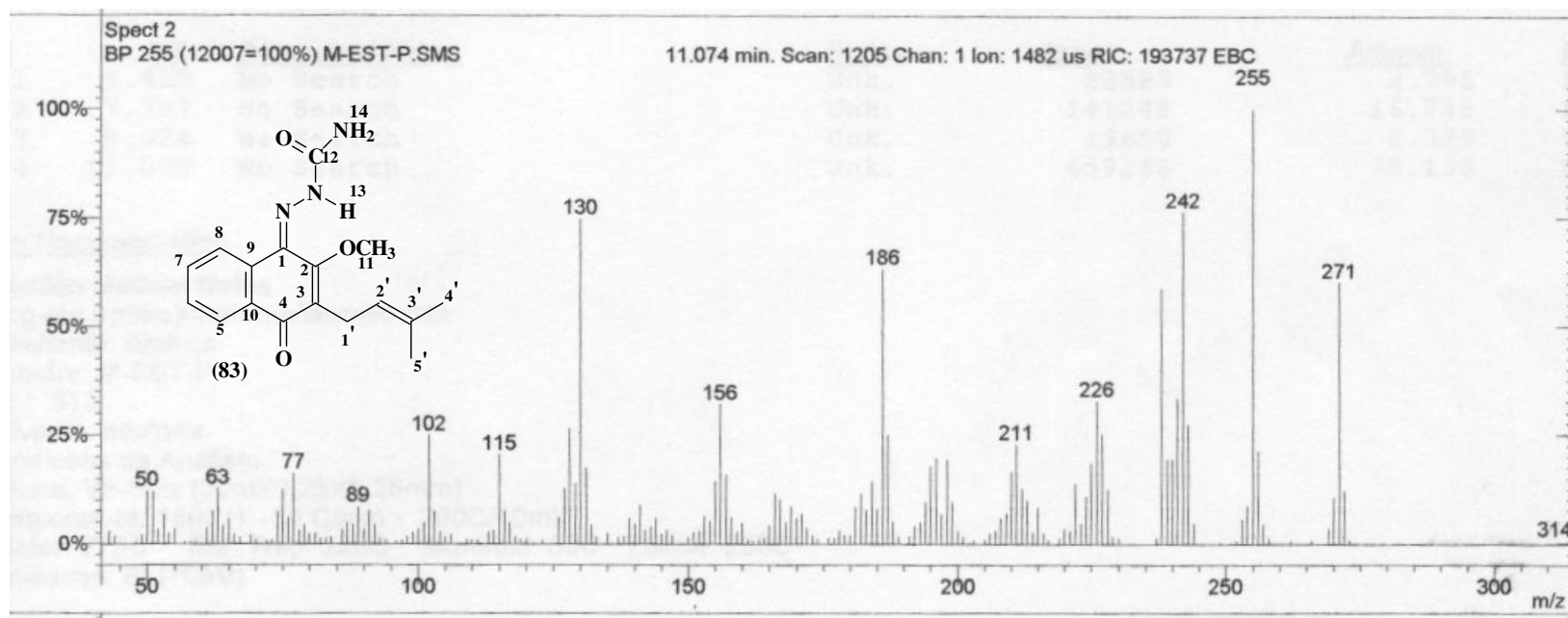
Espectro 106: RMN de ^{13}C do composto 82.



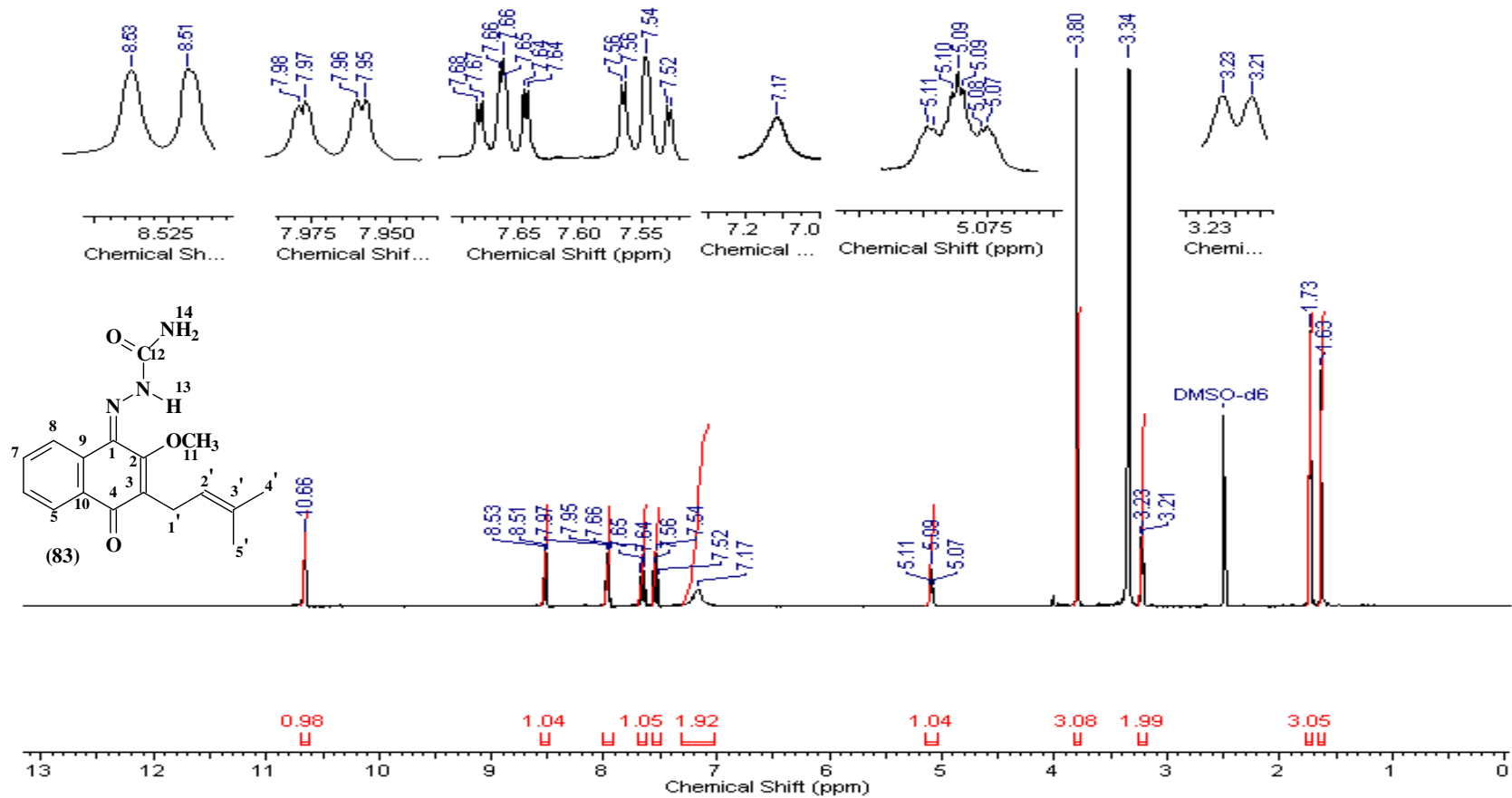
Espectro 107 RMN HET-COSY (J^2 e J^3) composto **82**.



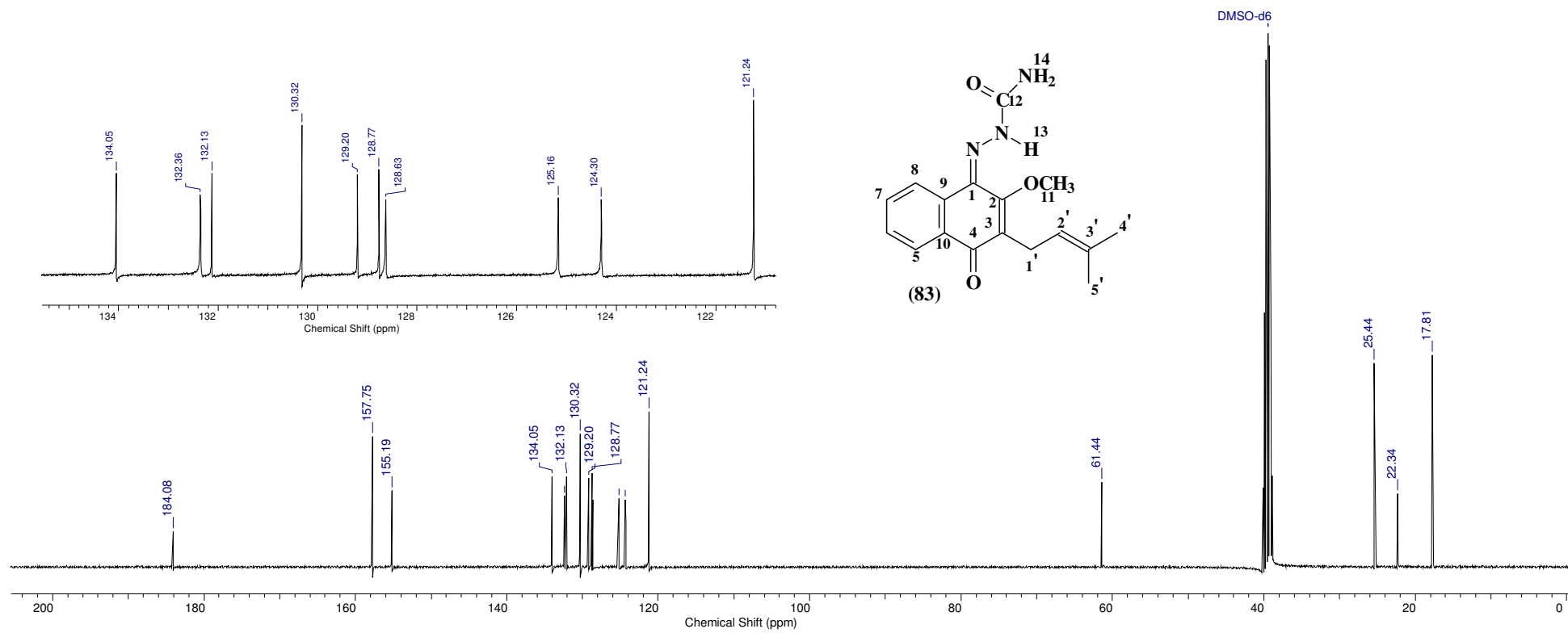
Espectro 108: IV do composto 83.



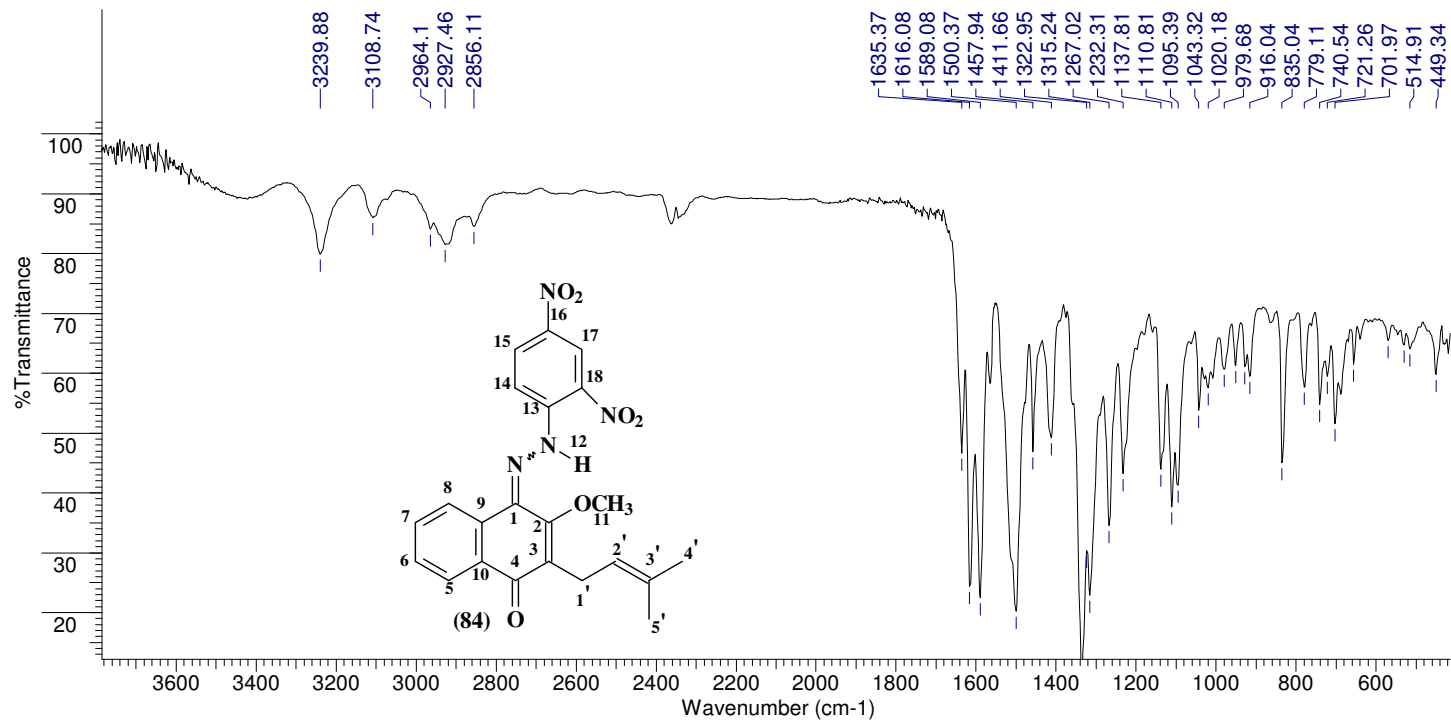
Espectro 109: E.M do composto **83**.



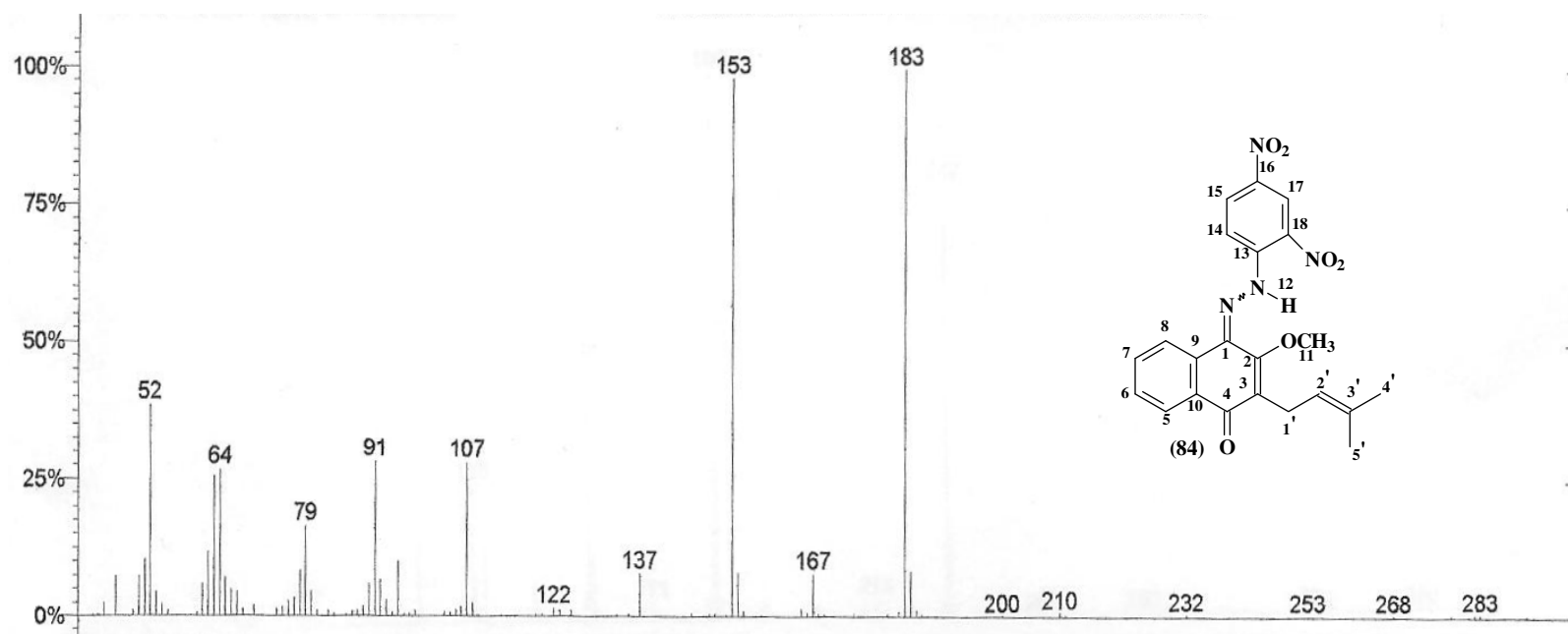
Espectro 110: RMN de ¹H do composto 83.



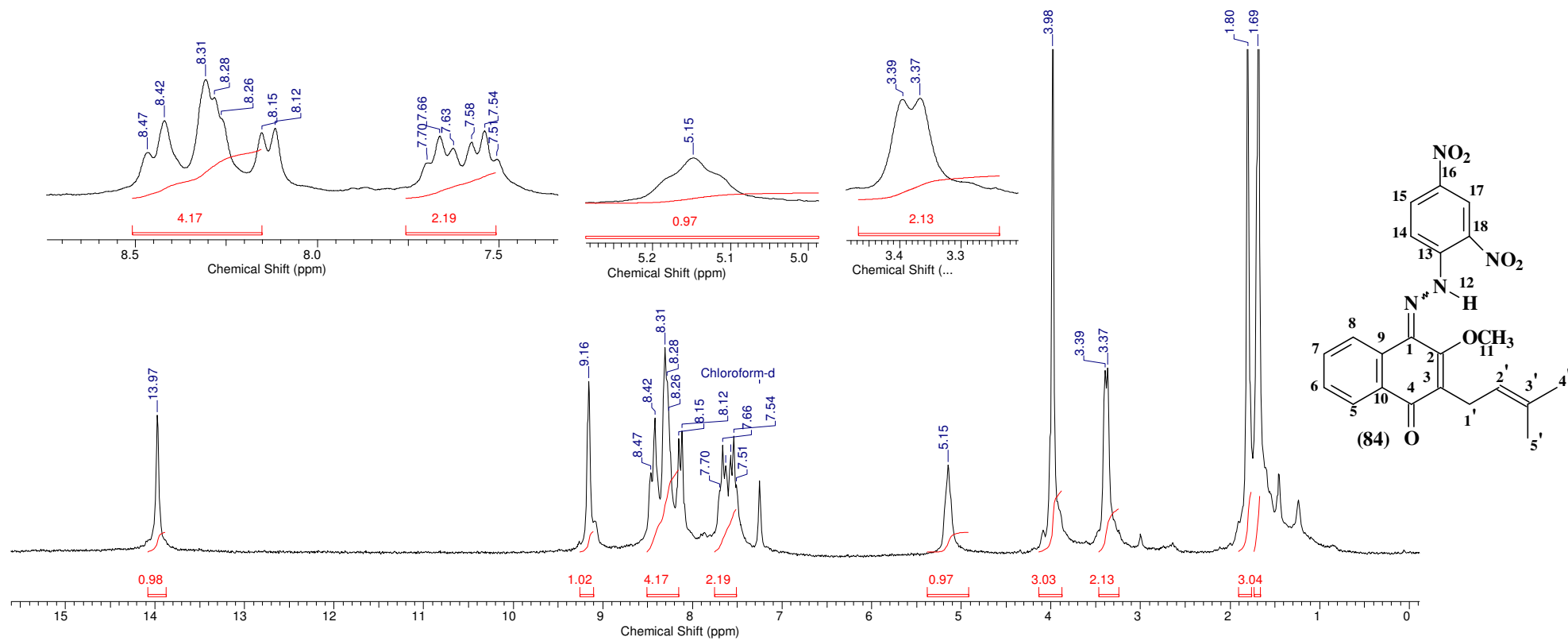
Espectro 111: RMN de ^{13}C do composto **83**.



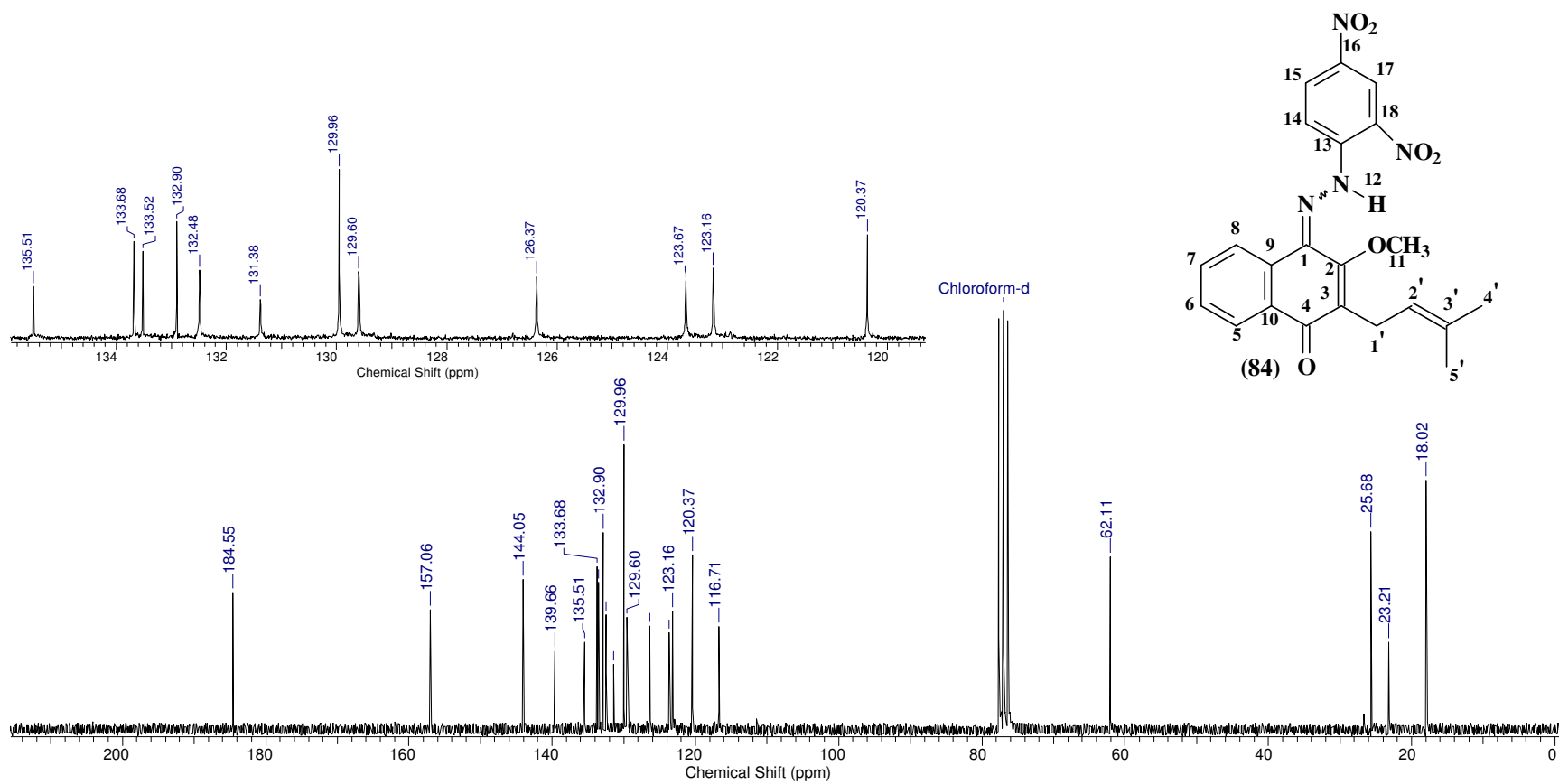
Espectro 112: IV do composto 84.



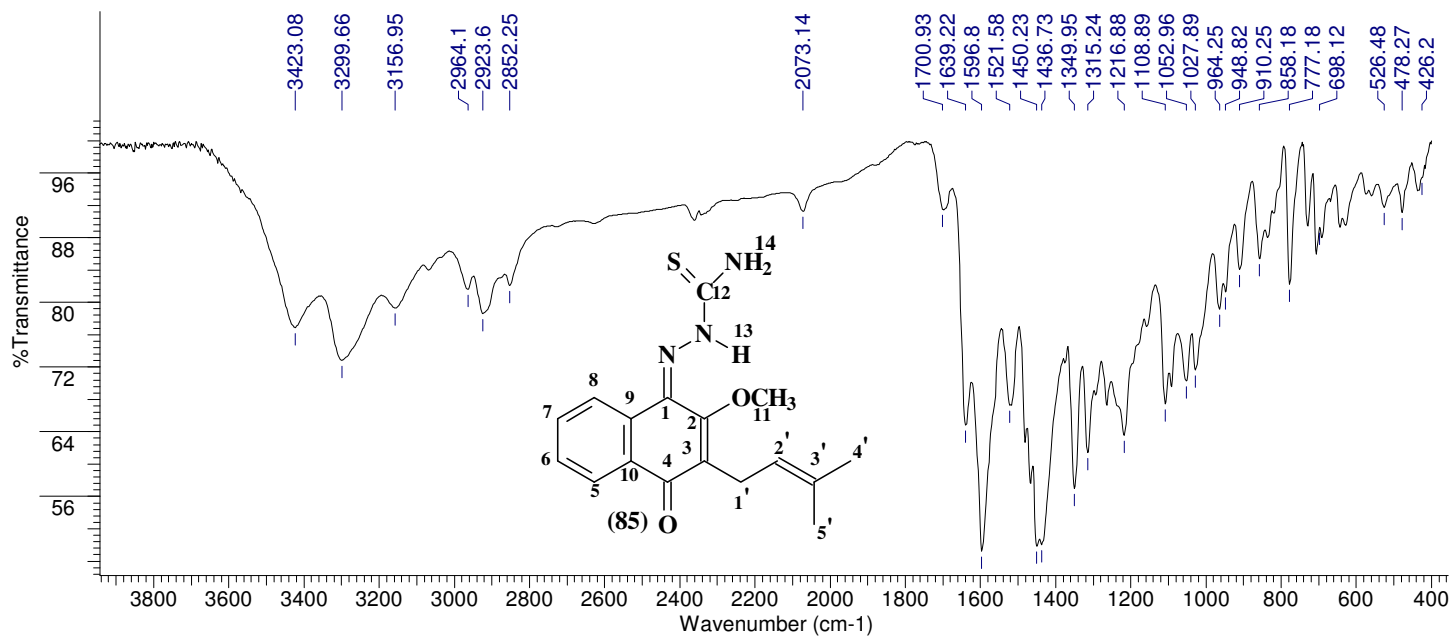
Espectro 113: E.M do composto **84**.



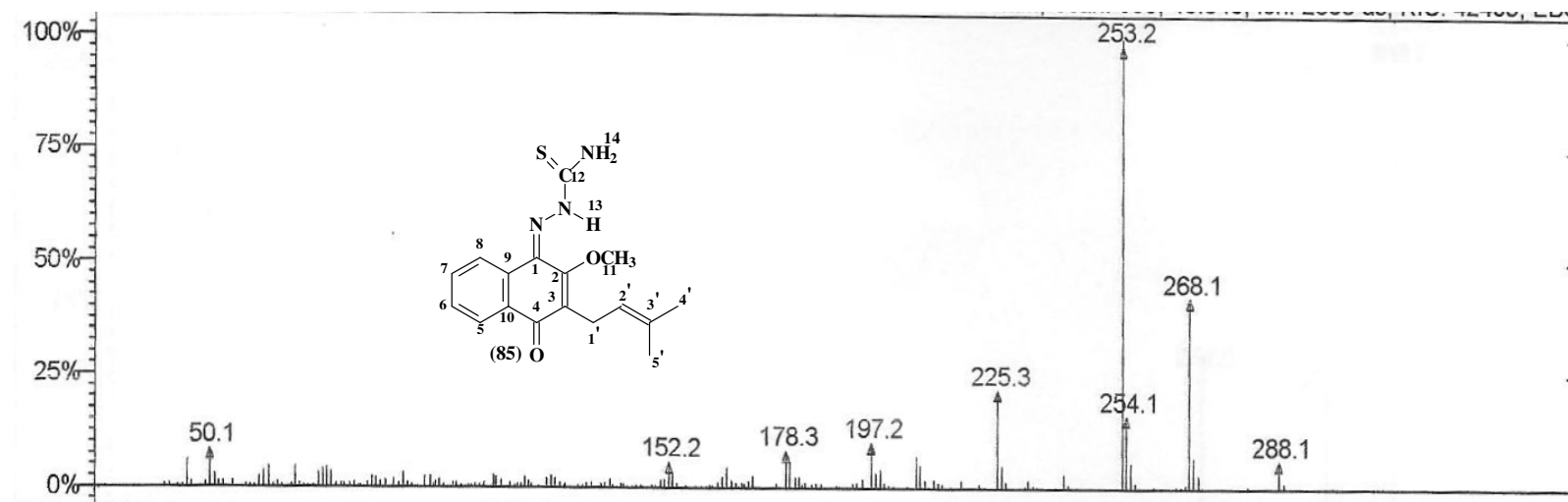
Espectro 114: RMN de ^1H do composto **84**.



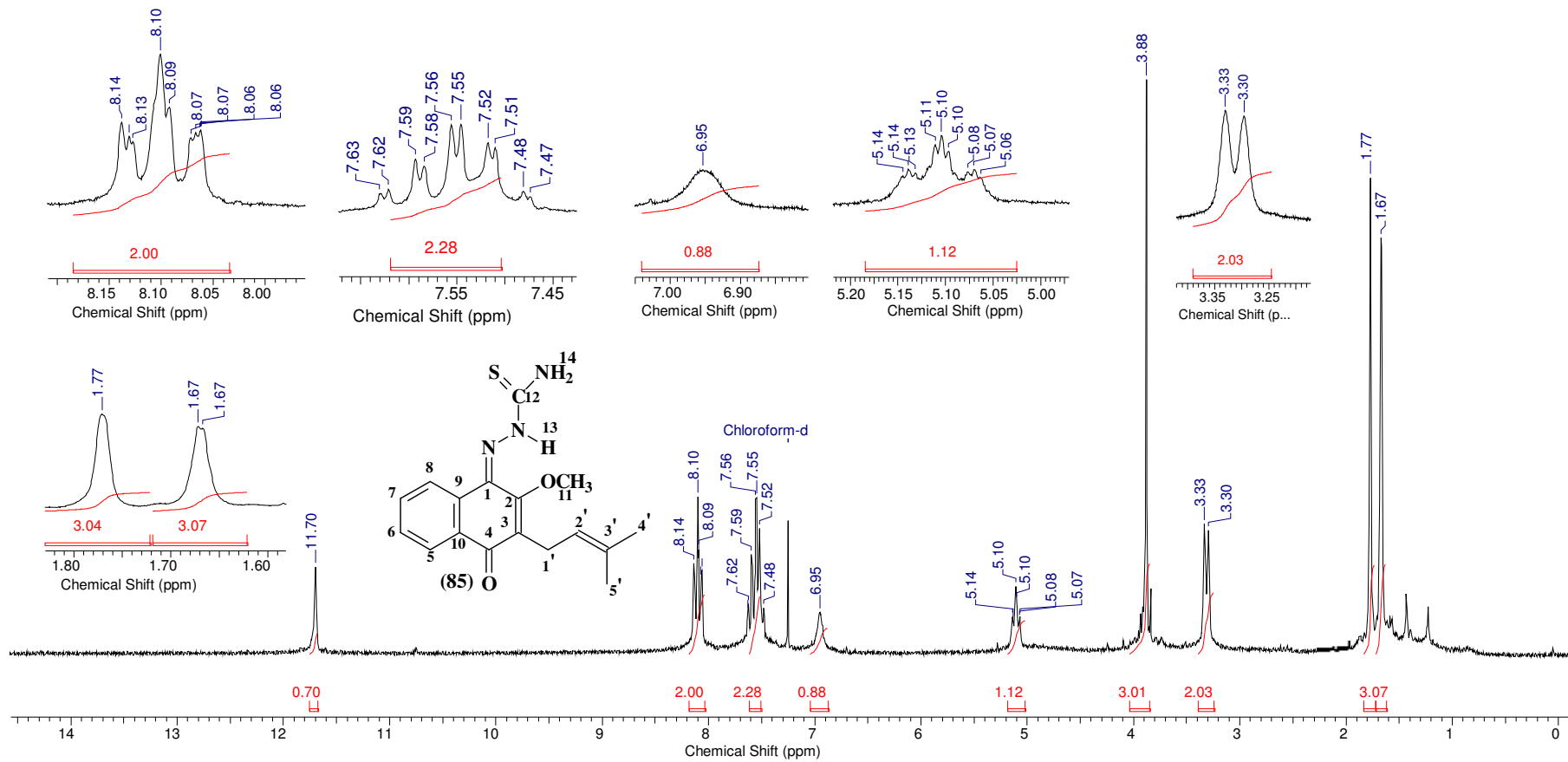
Espectro 115: RMN de ¹³C do composto **84**.



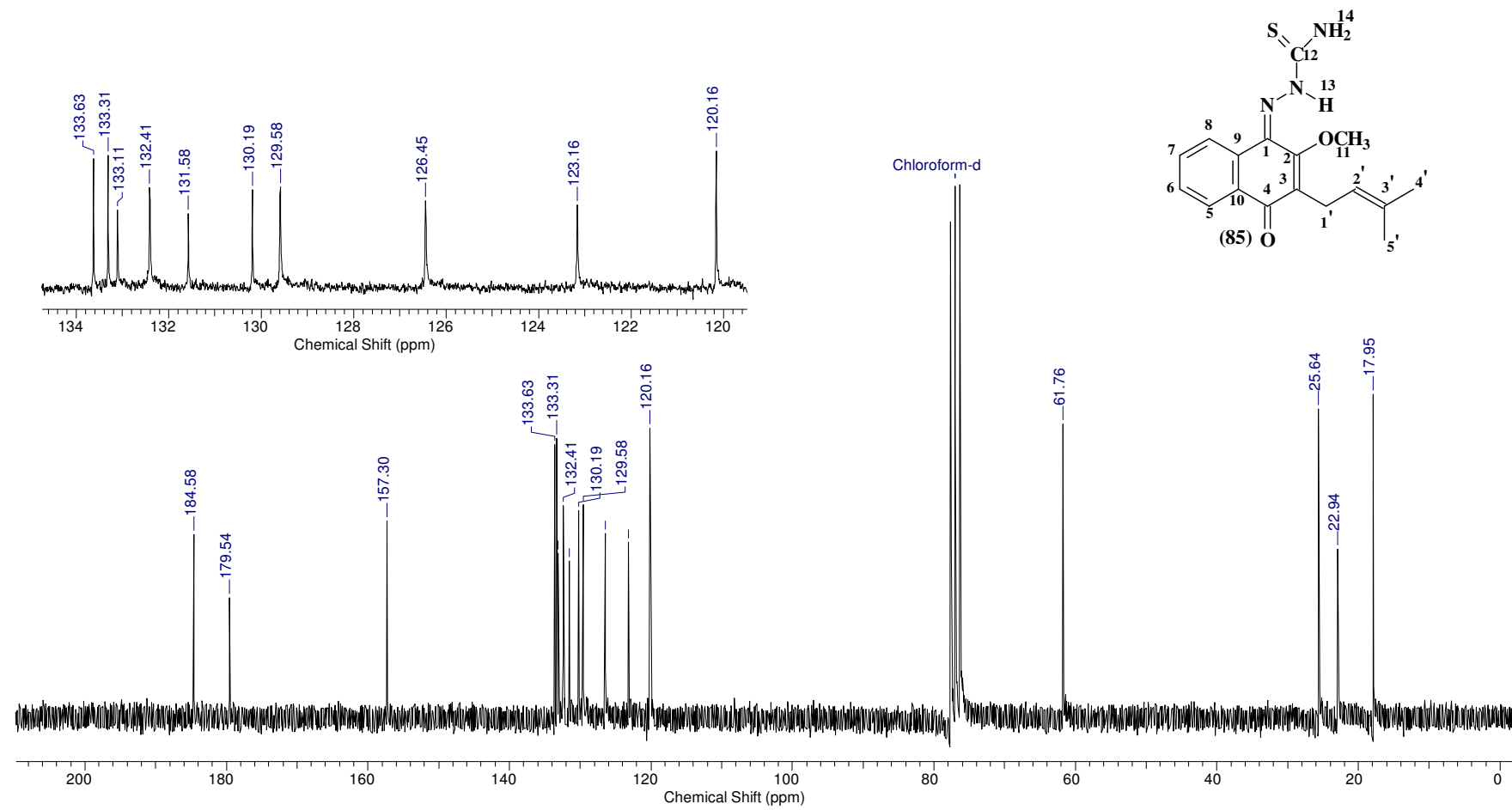
Espectro 116: IV do composto 85.



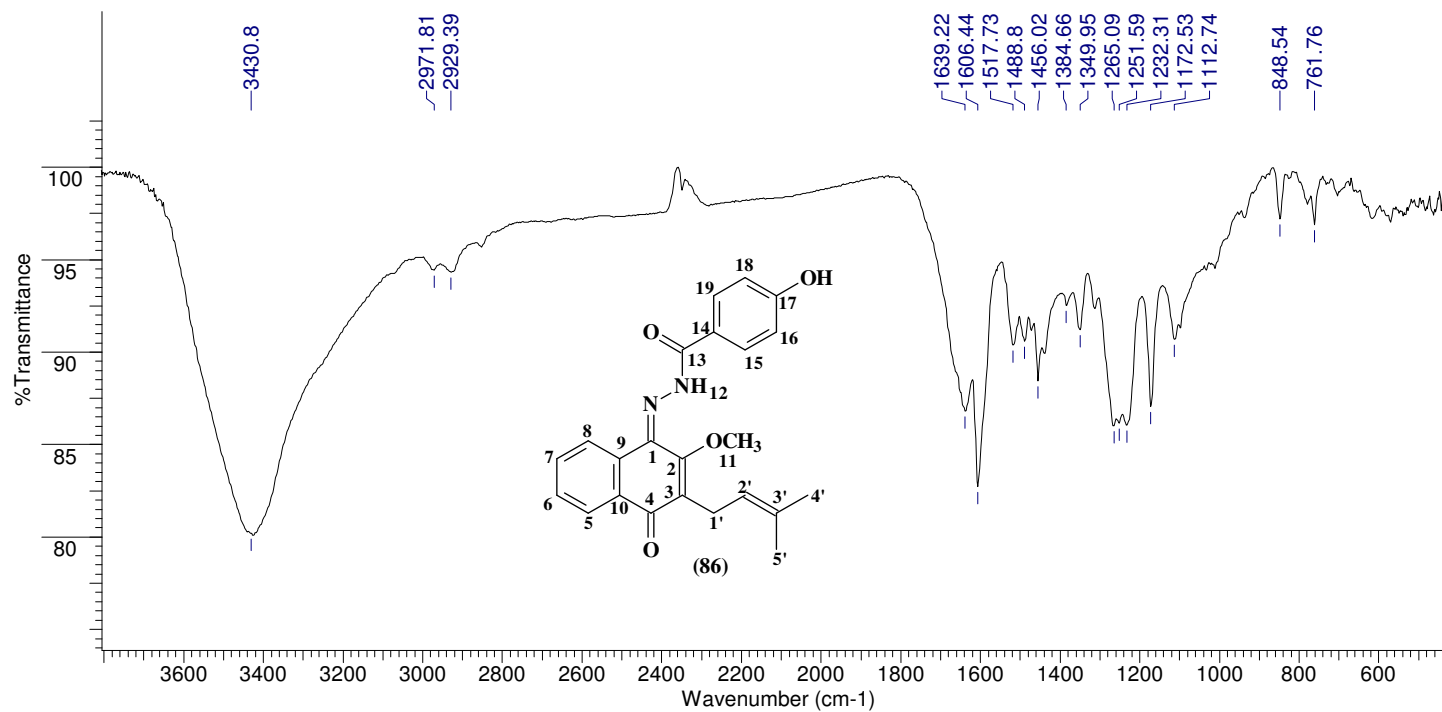
Espectro 117: E.M. do composto **85**.



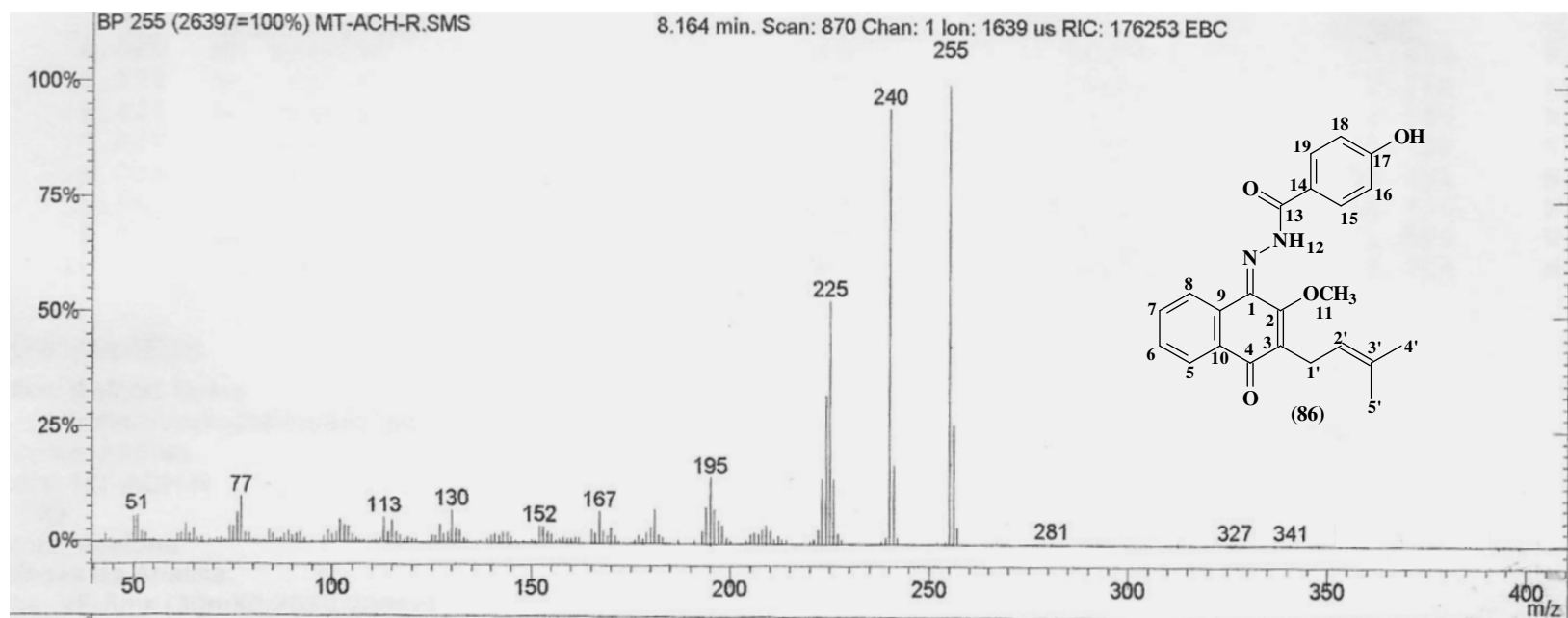
Espectro 118: RMN de ¹H do composto **85**.



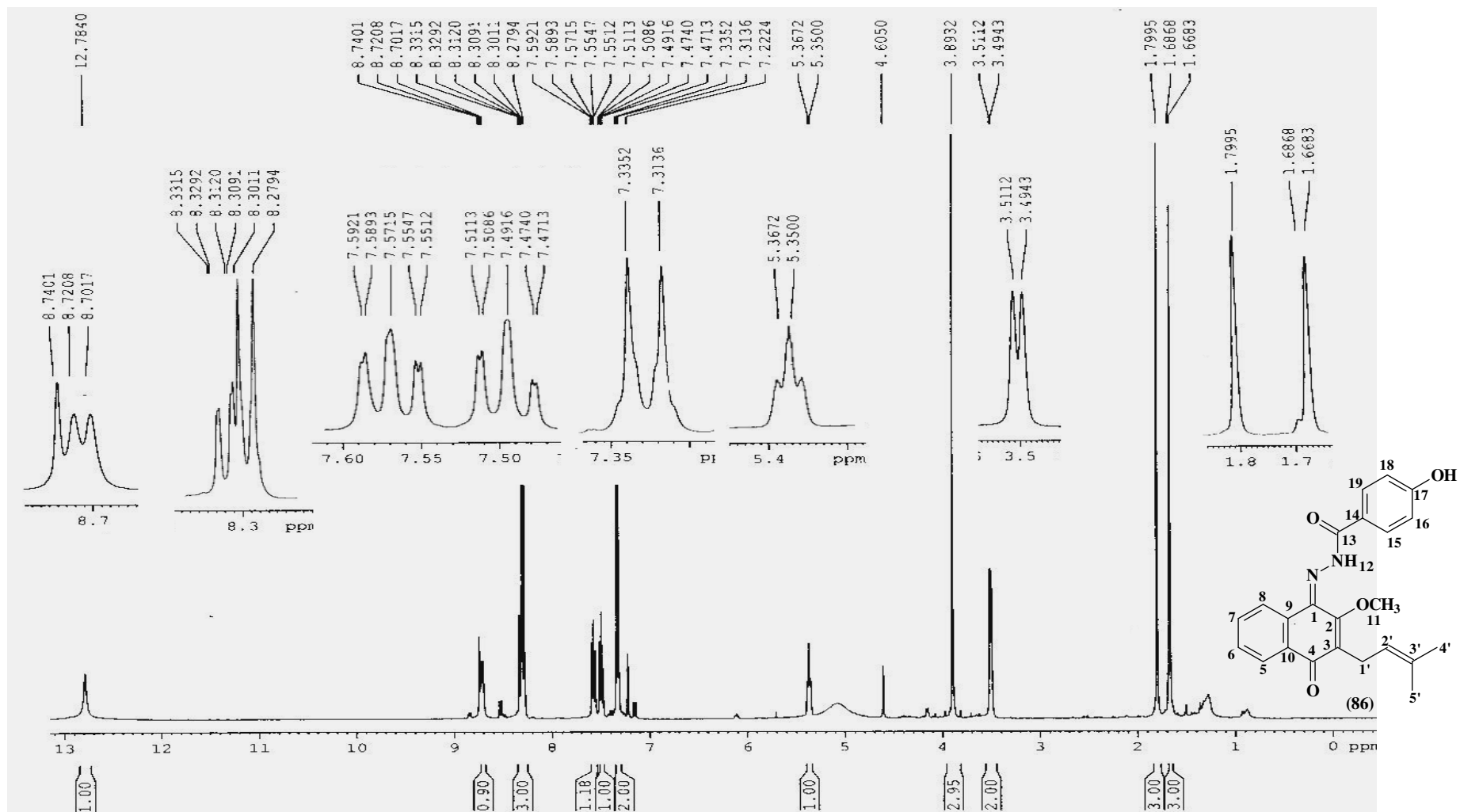
Espectro 119: RMN de ^{13}C do composto 85.



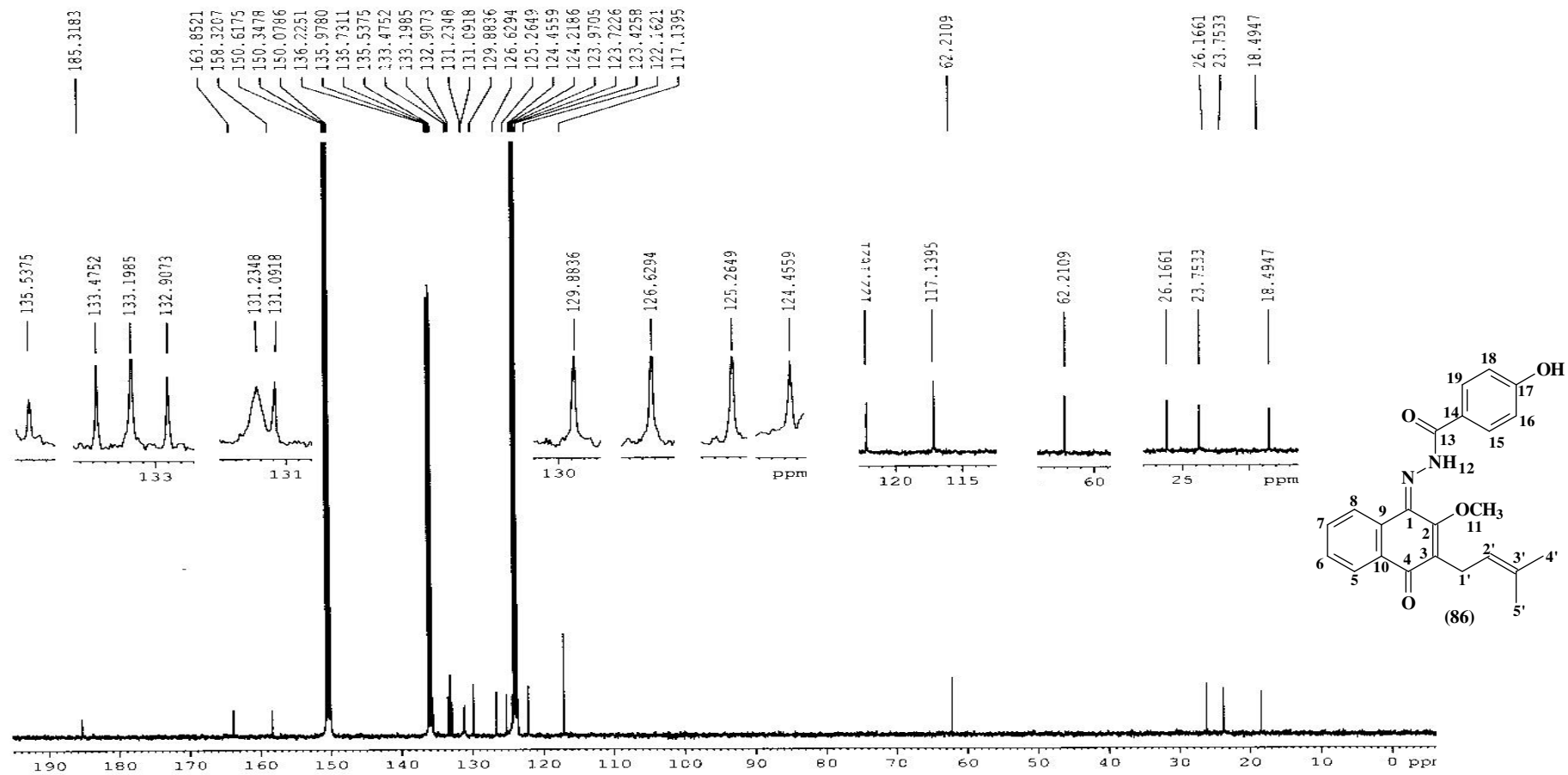
Espectro 120: IV do composto **86**.



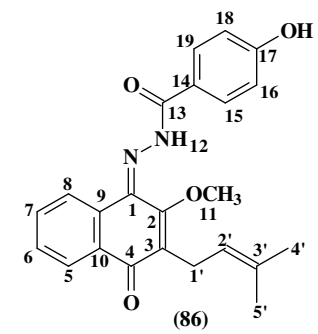
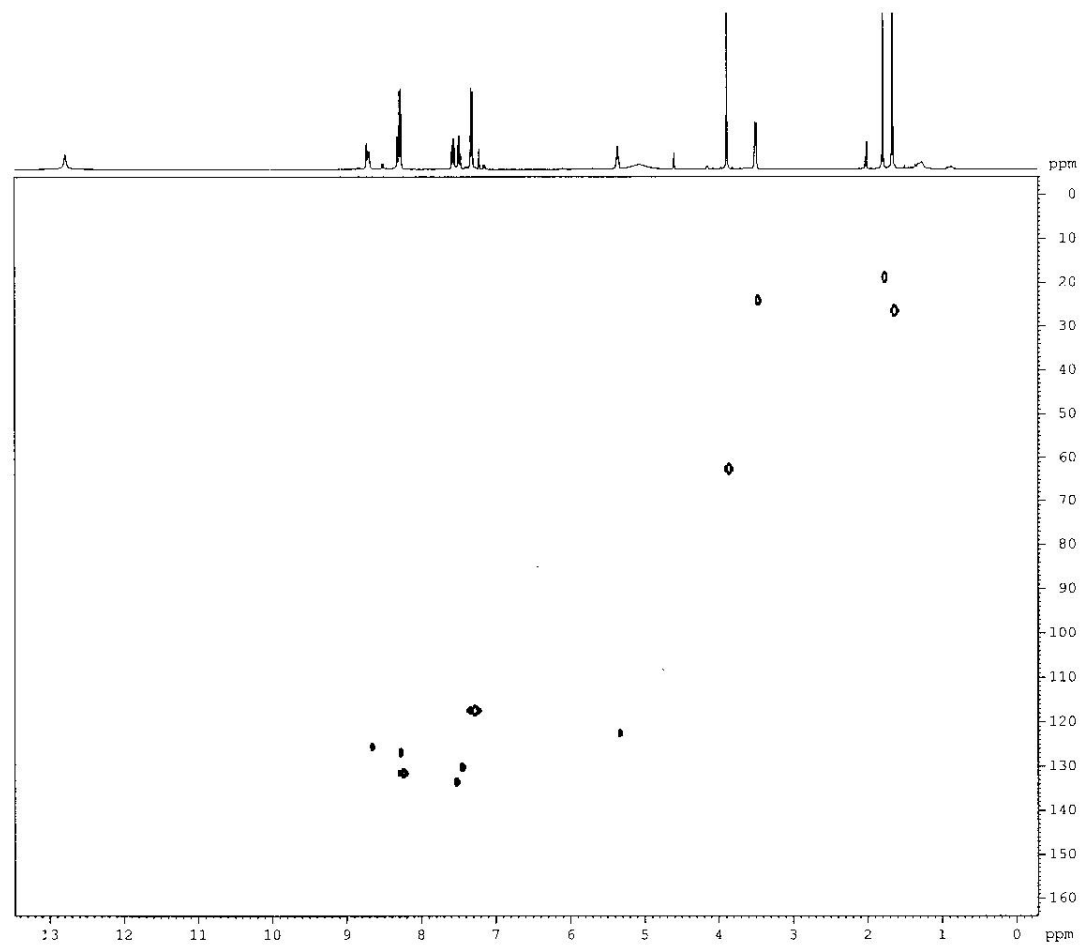
Espectro 121: E.M. do composto **86**.



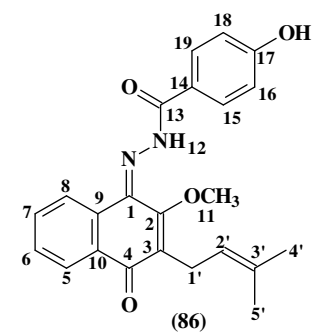
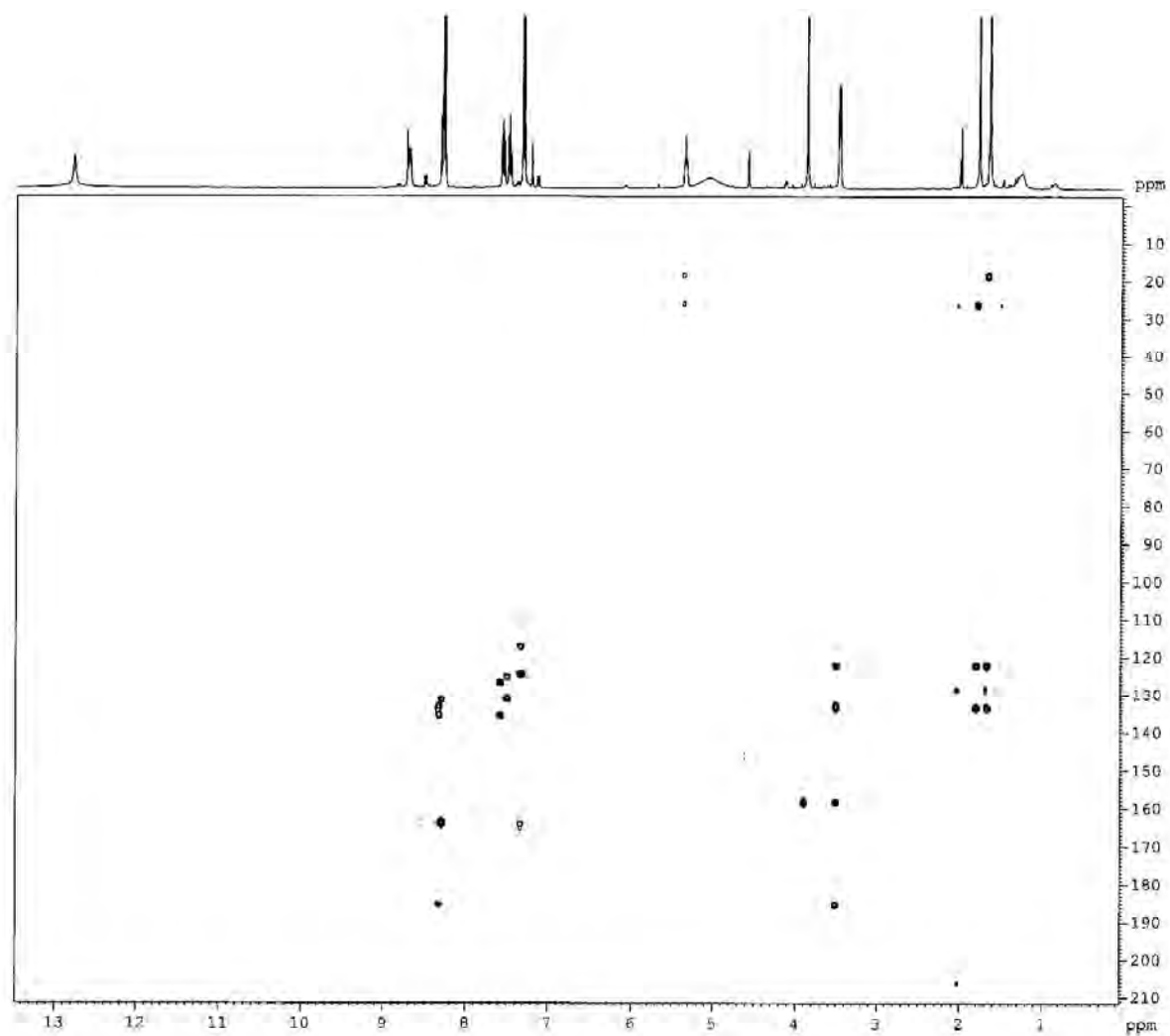
Espectro 122: RMN de ¹H do composto 86.



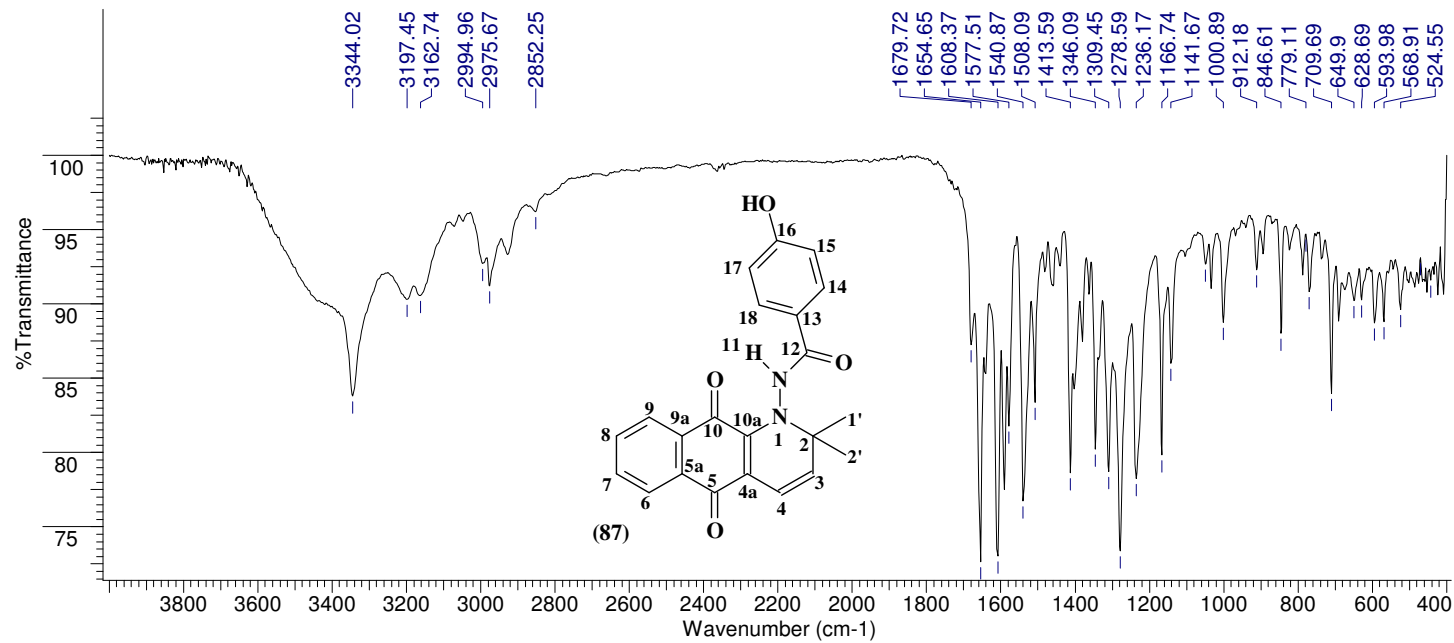
Espectro 123: RMN de ^{13}C do composto 86.



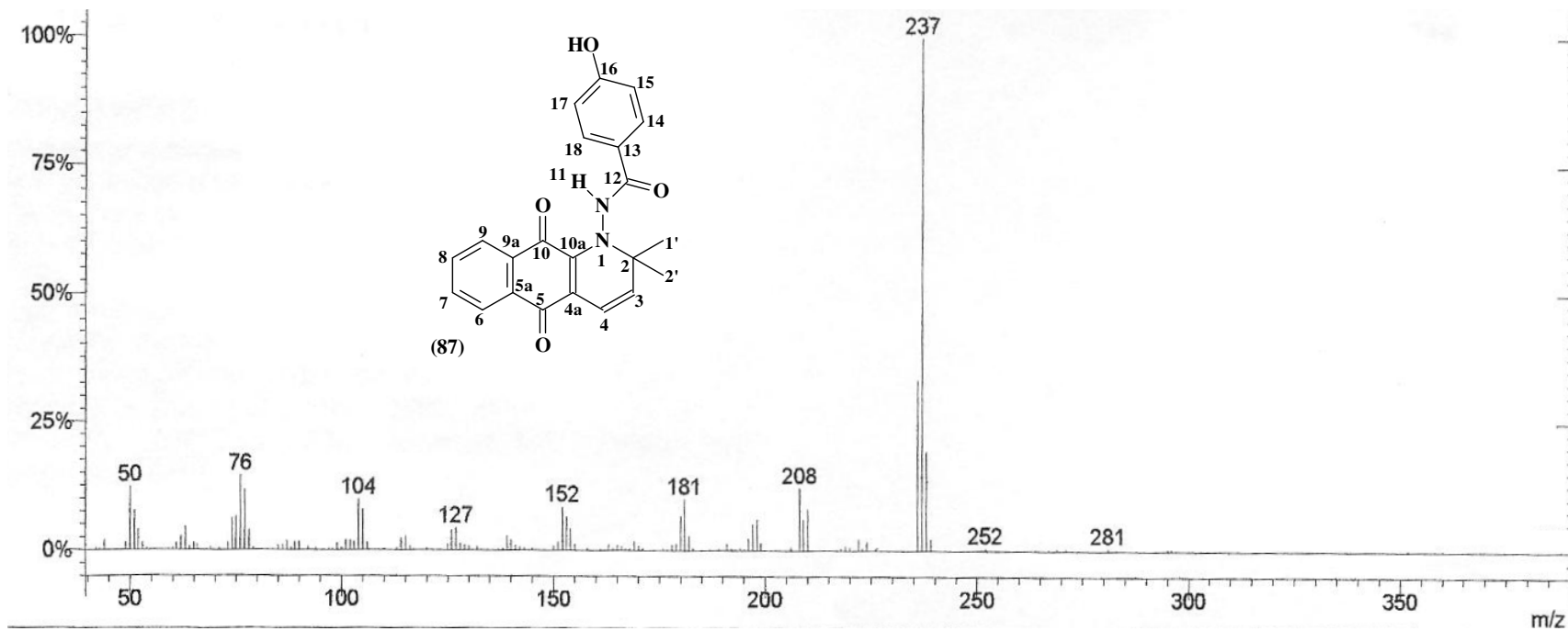
Espectro 124: RMN HET-COSY (J^1) do composto **86**.



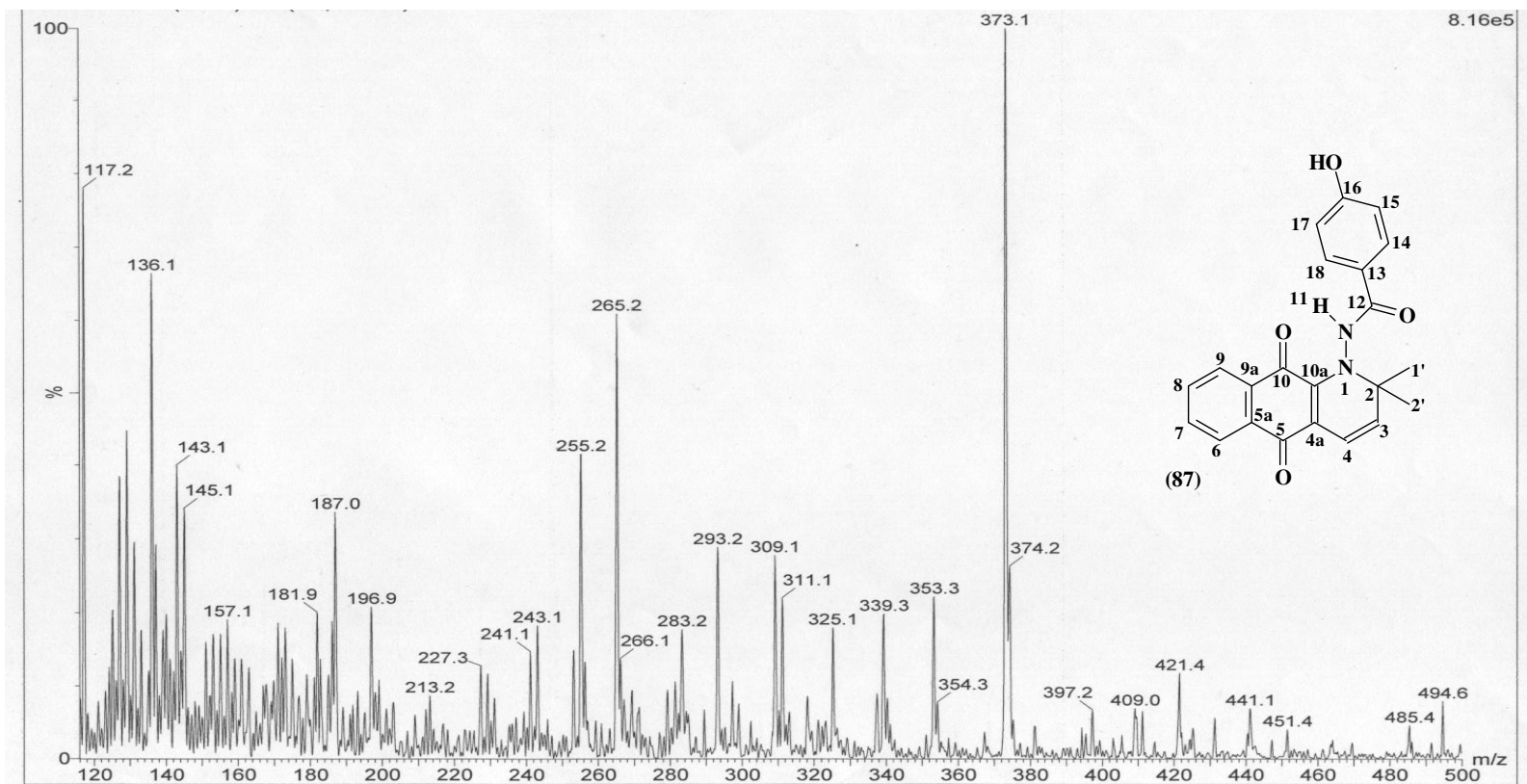
Espectro 125: RMN HET-COSY (J^2 e J^3) do composto **86**.



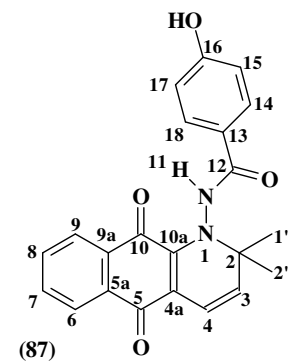
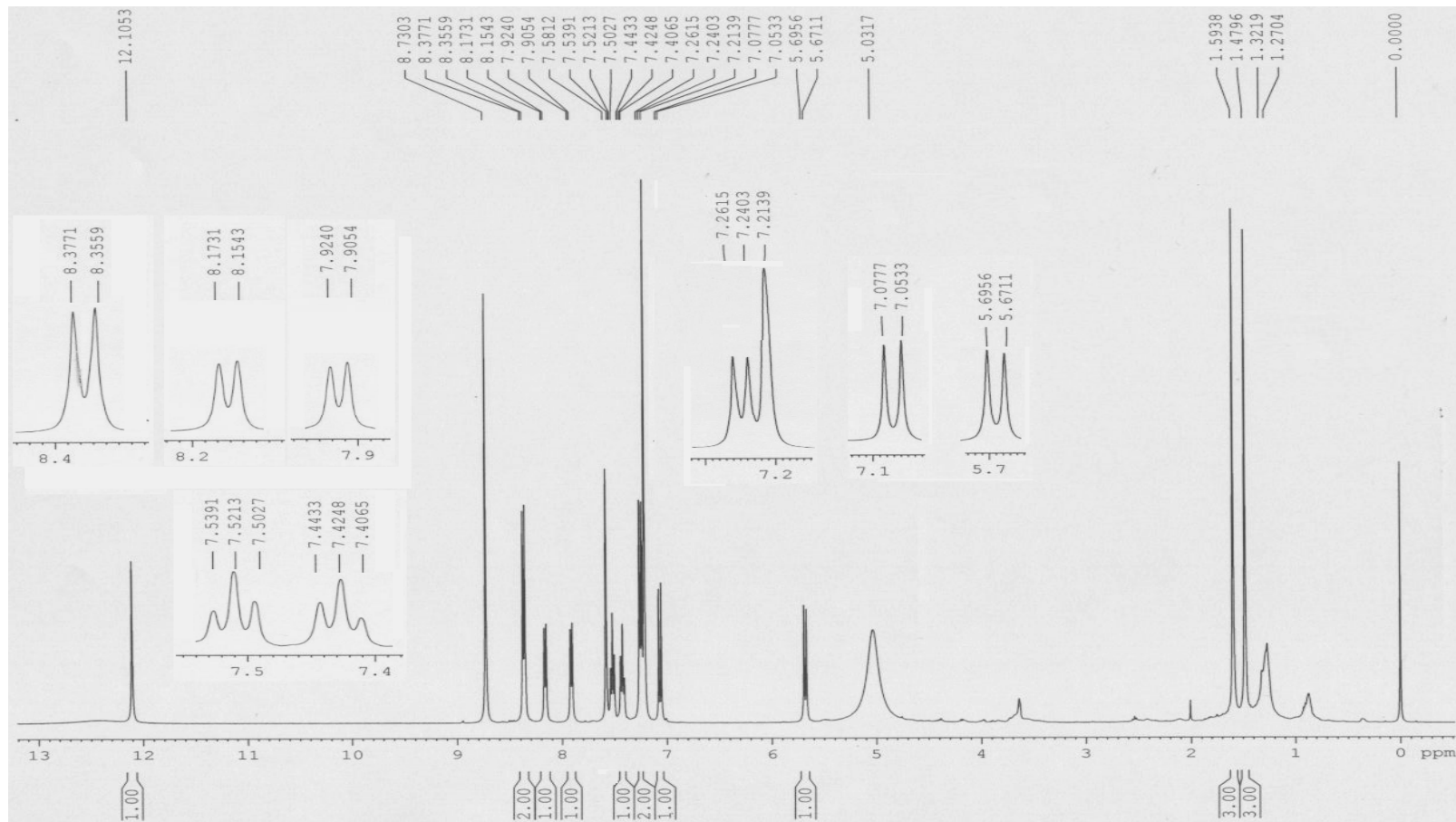
Espectro 126: IV do composto 87.



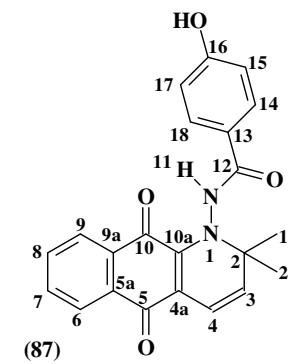
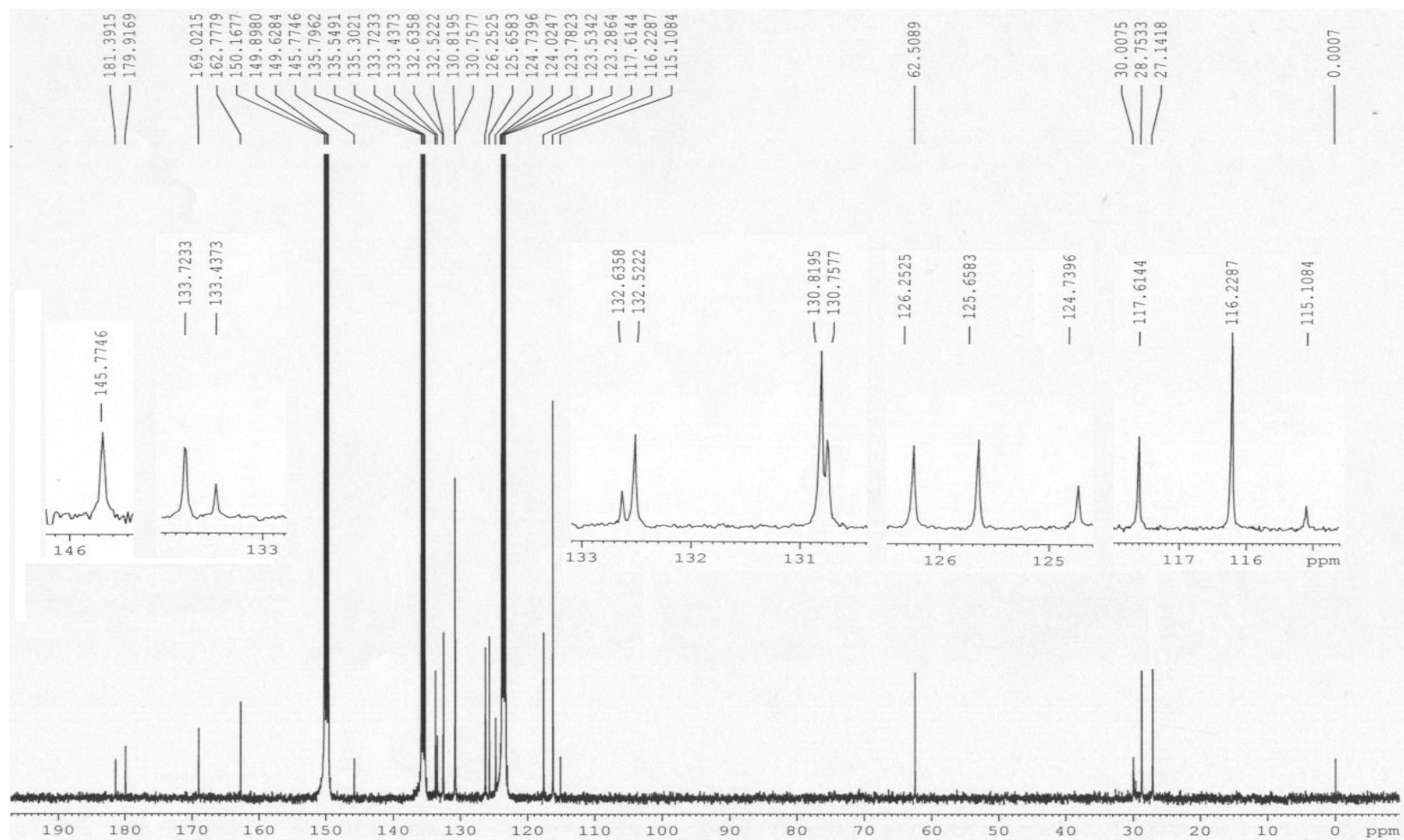
Espectro 127: E.M. do composto **87**.



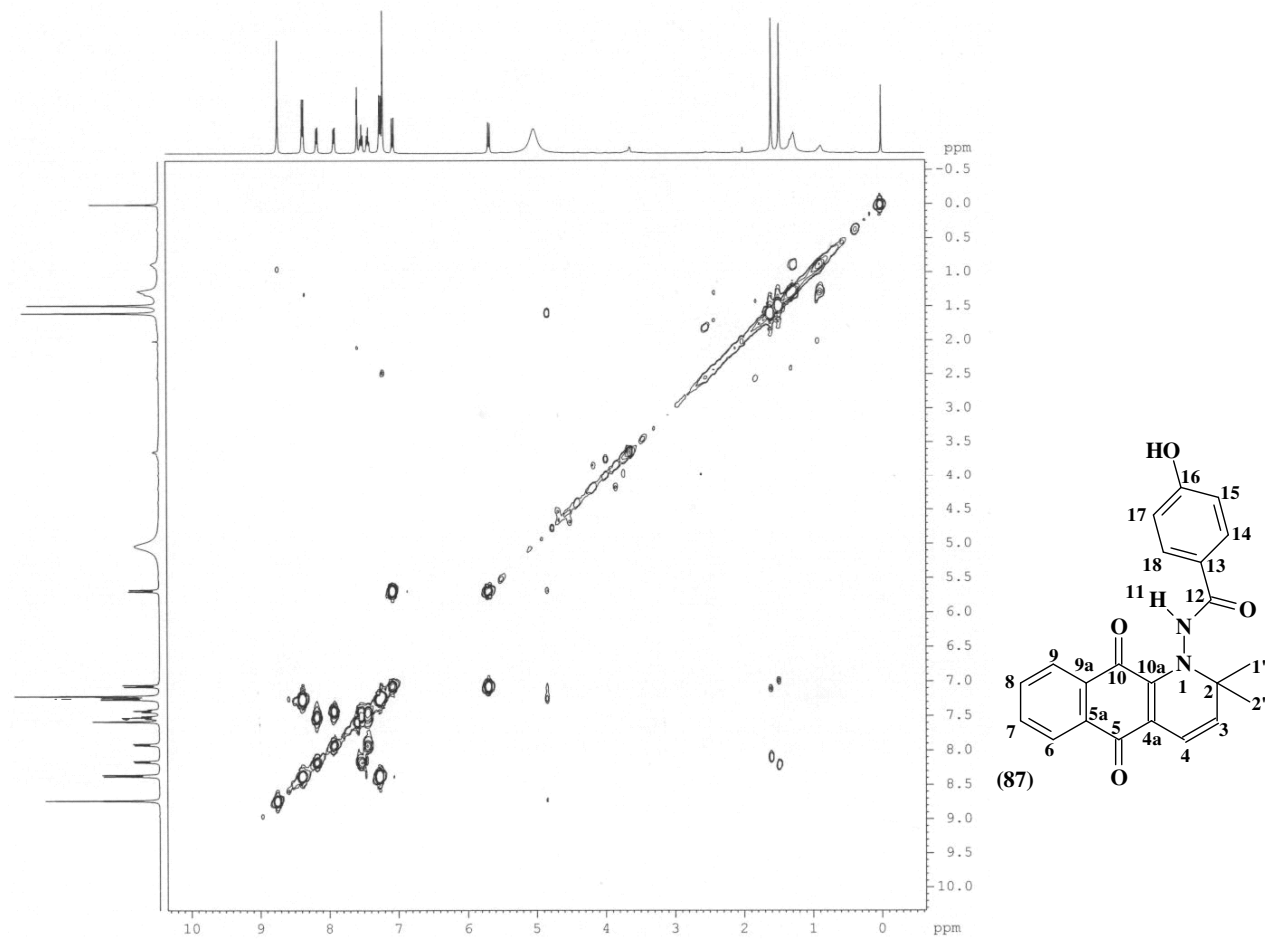
Espectro 128: EM-ES íons negativos do composto **87**.



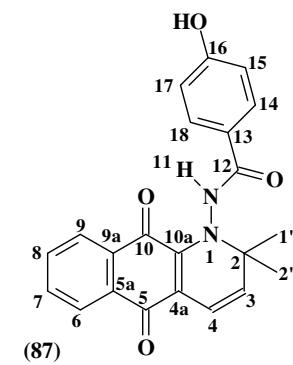
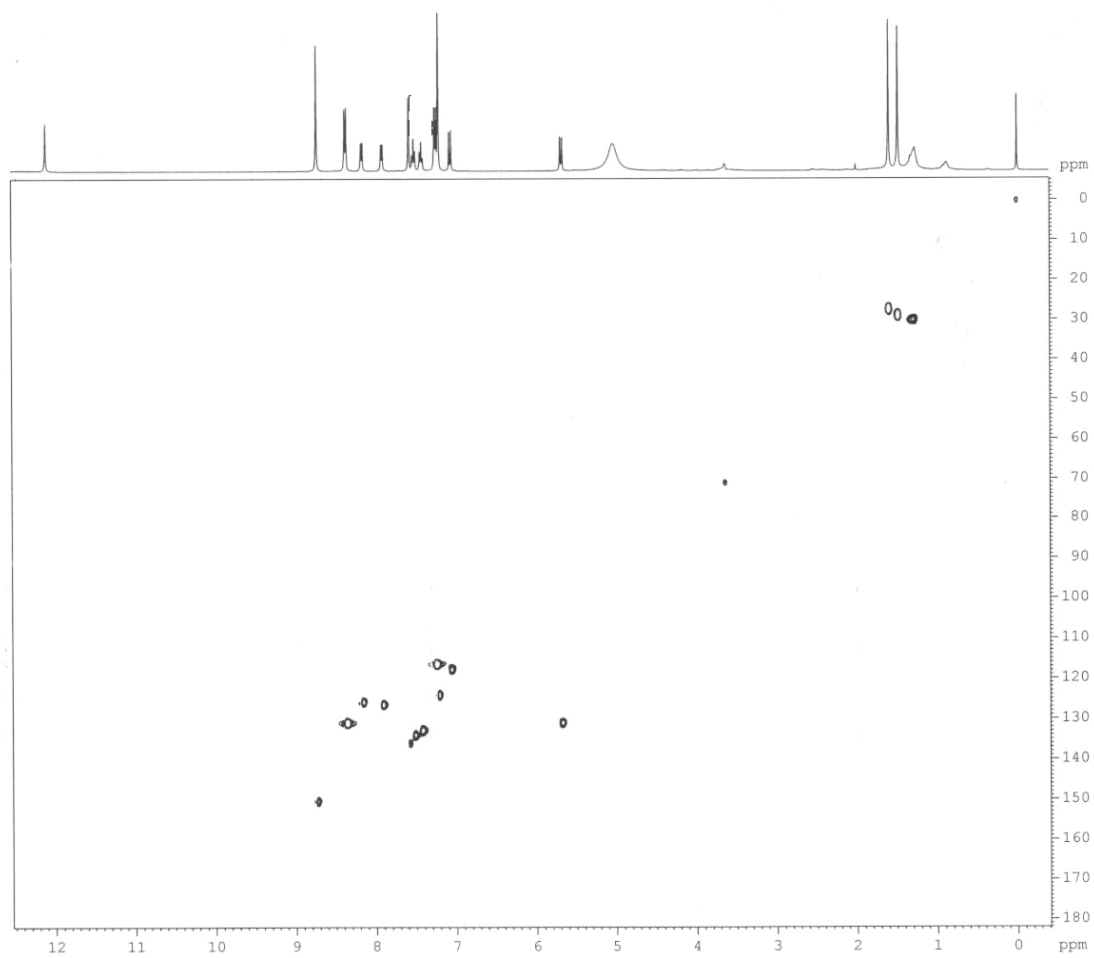
Espectro 129: RMN de ^1H do composto **87**.



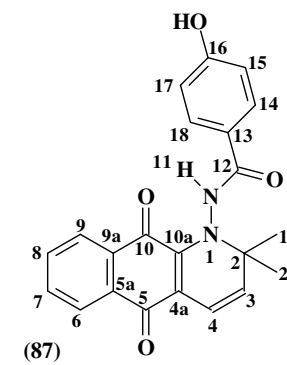
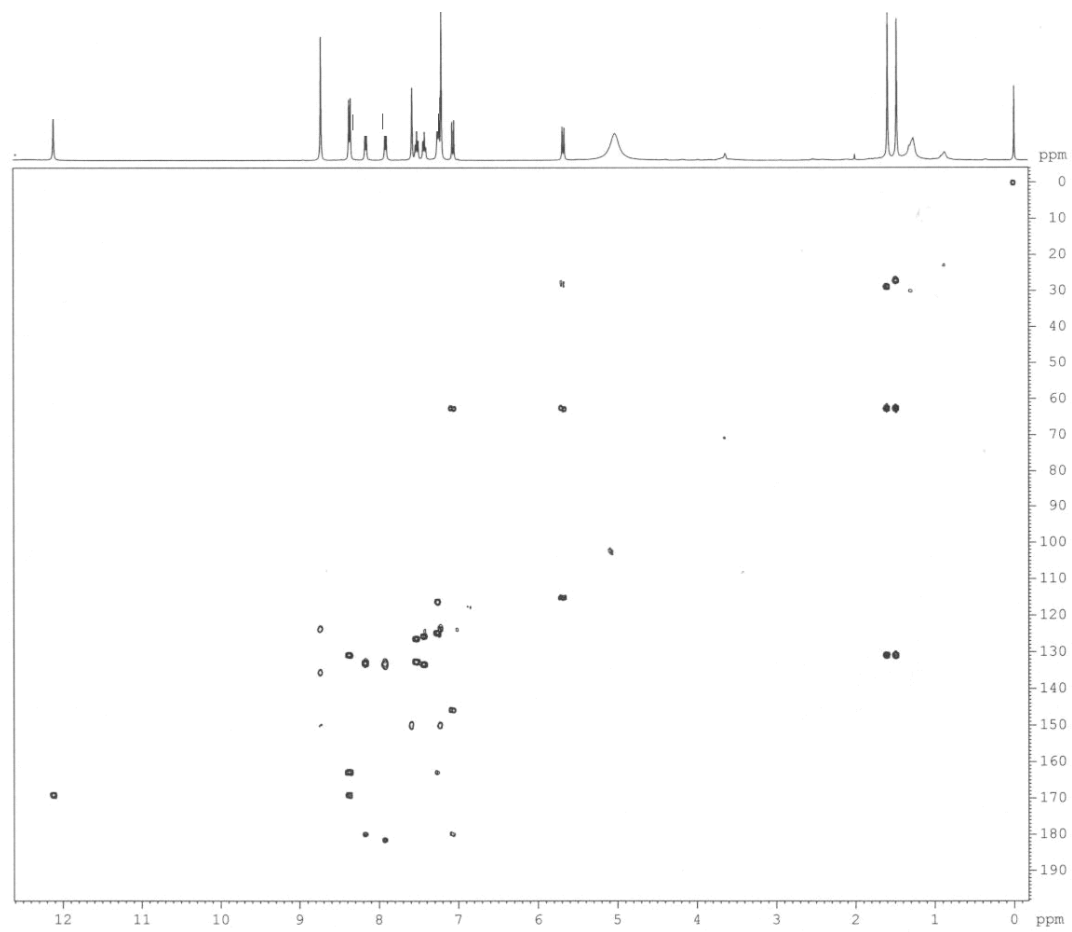
Espectro 130: RMN de ^{13}C do composto **87**.



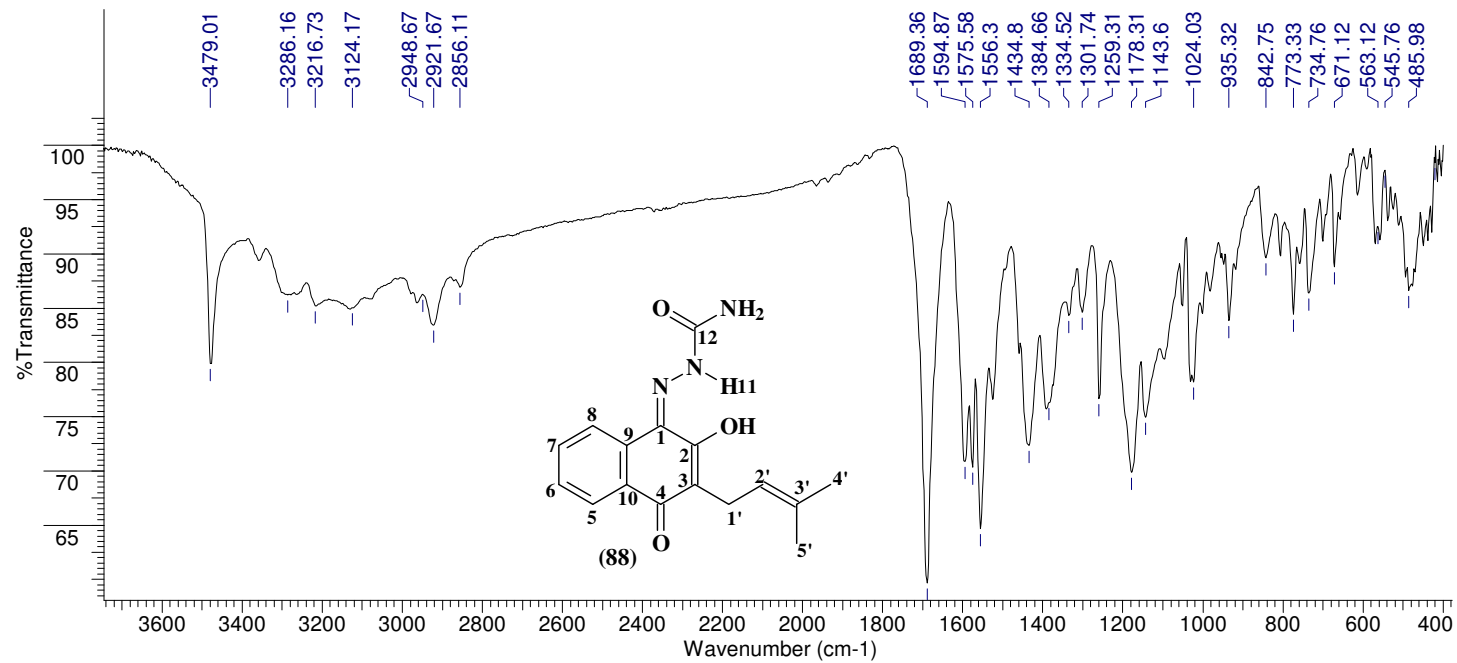
Espectro 131: RMN H x H COSY do composto **87**.



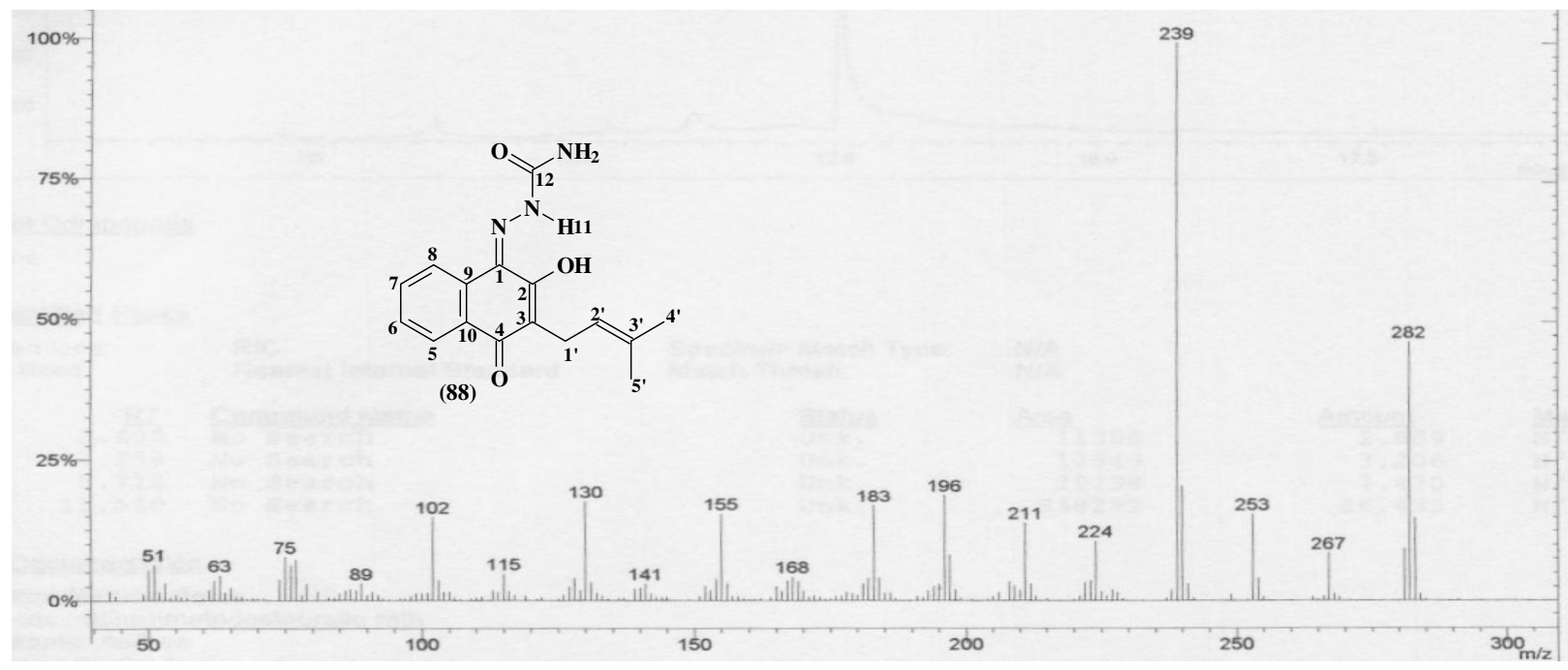
Espectro 132: RMN HET-COSY (J^1) do composto **87**.



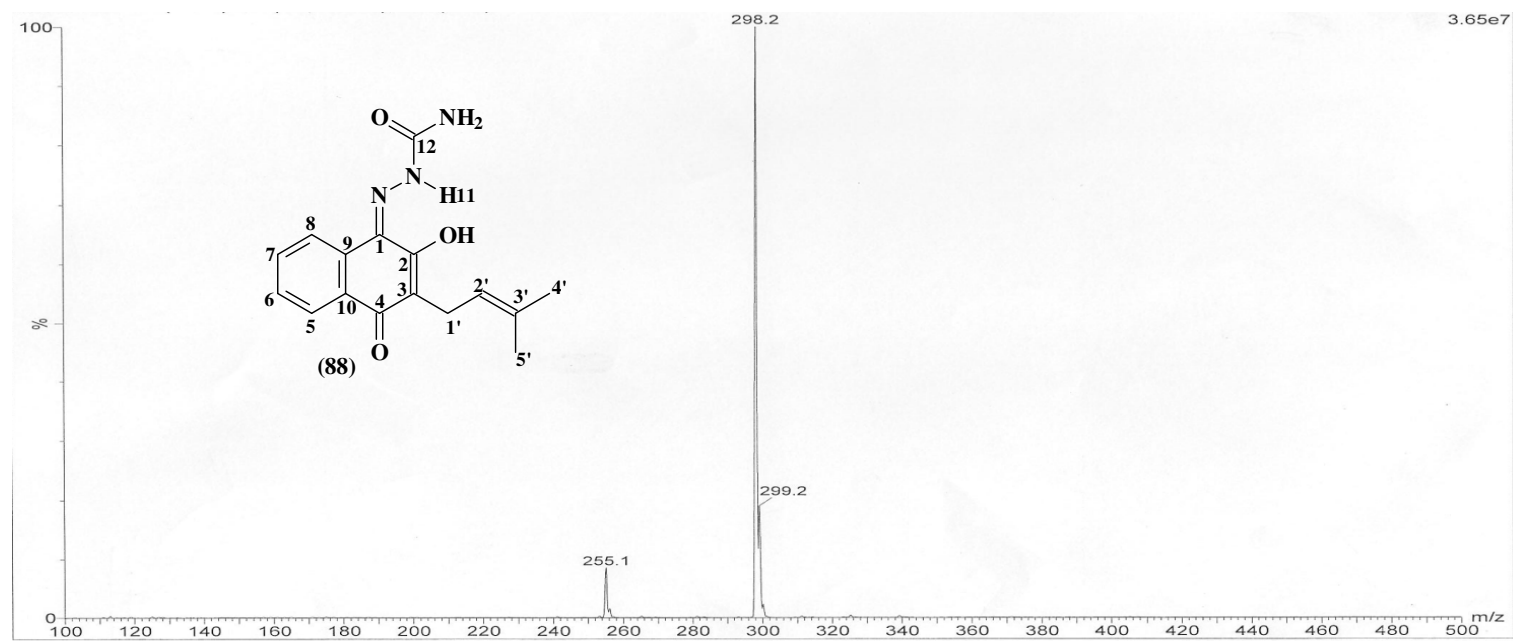
Espectro 133: RMN HET-COSY (J^z e J^y) do composto **87**.



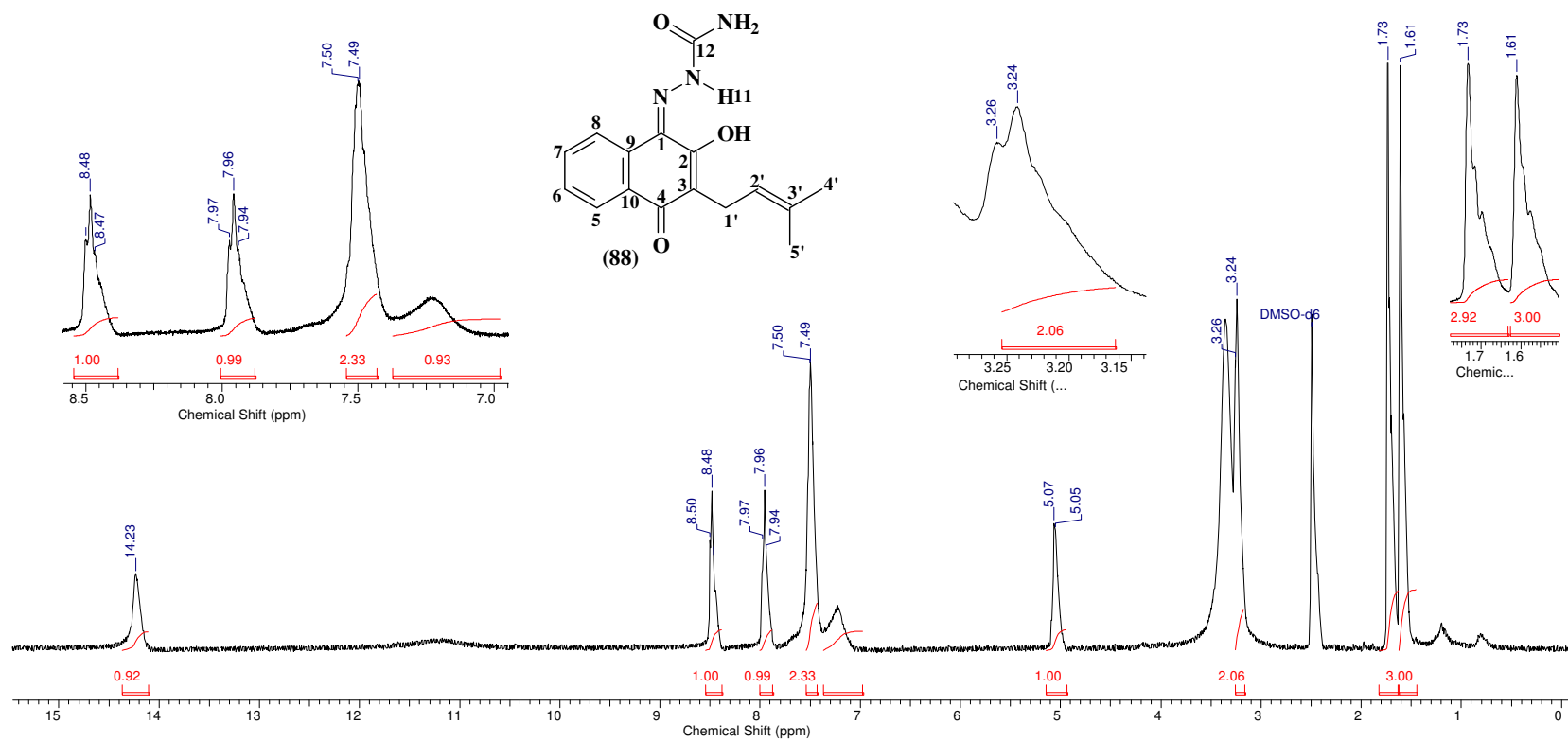
Espectro 134: IV do composto 88.



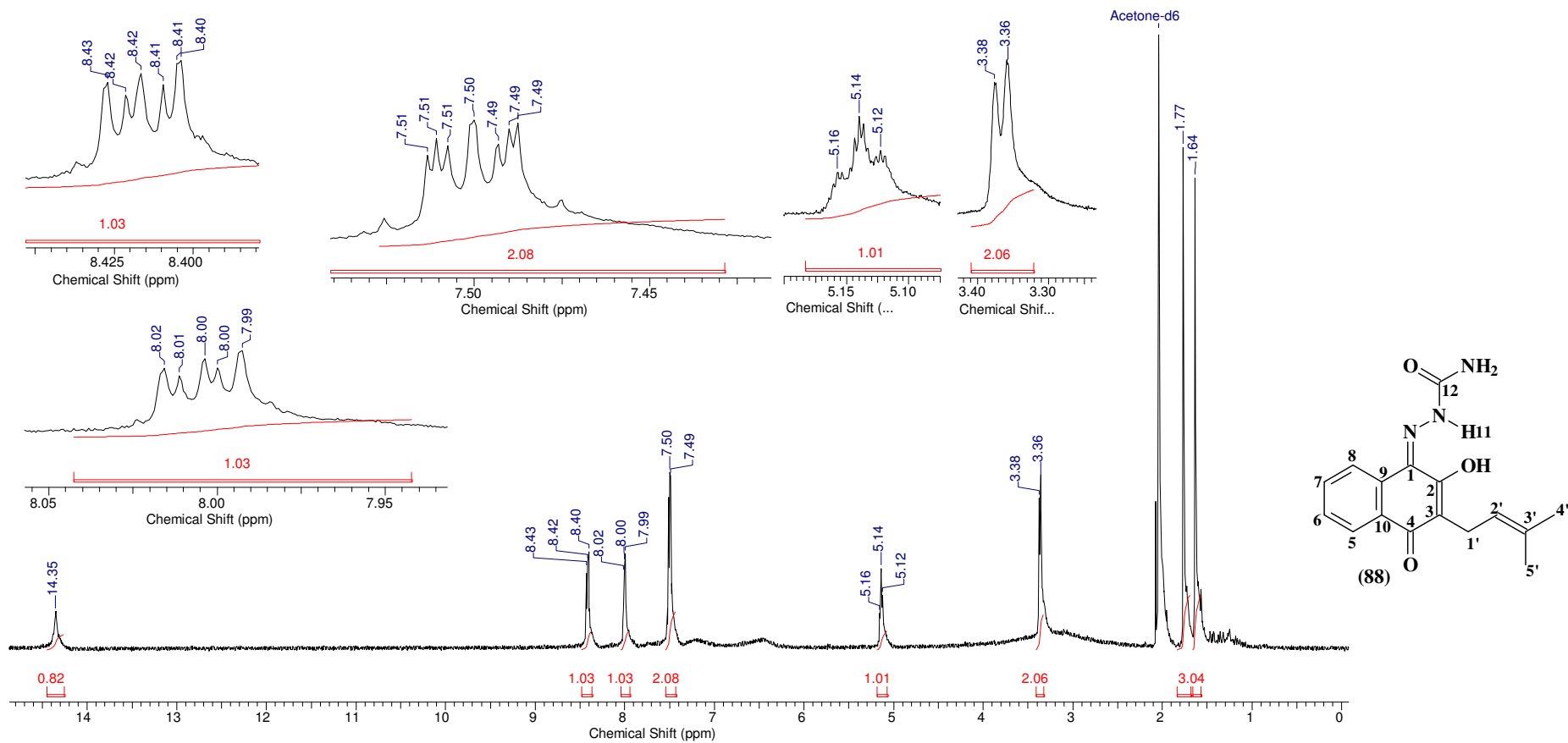
Espectro 135: E.M. do composto **81**.



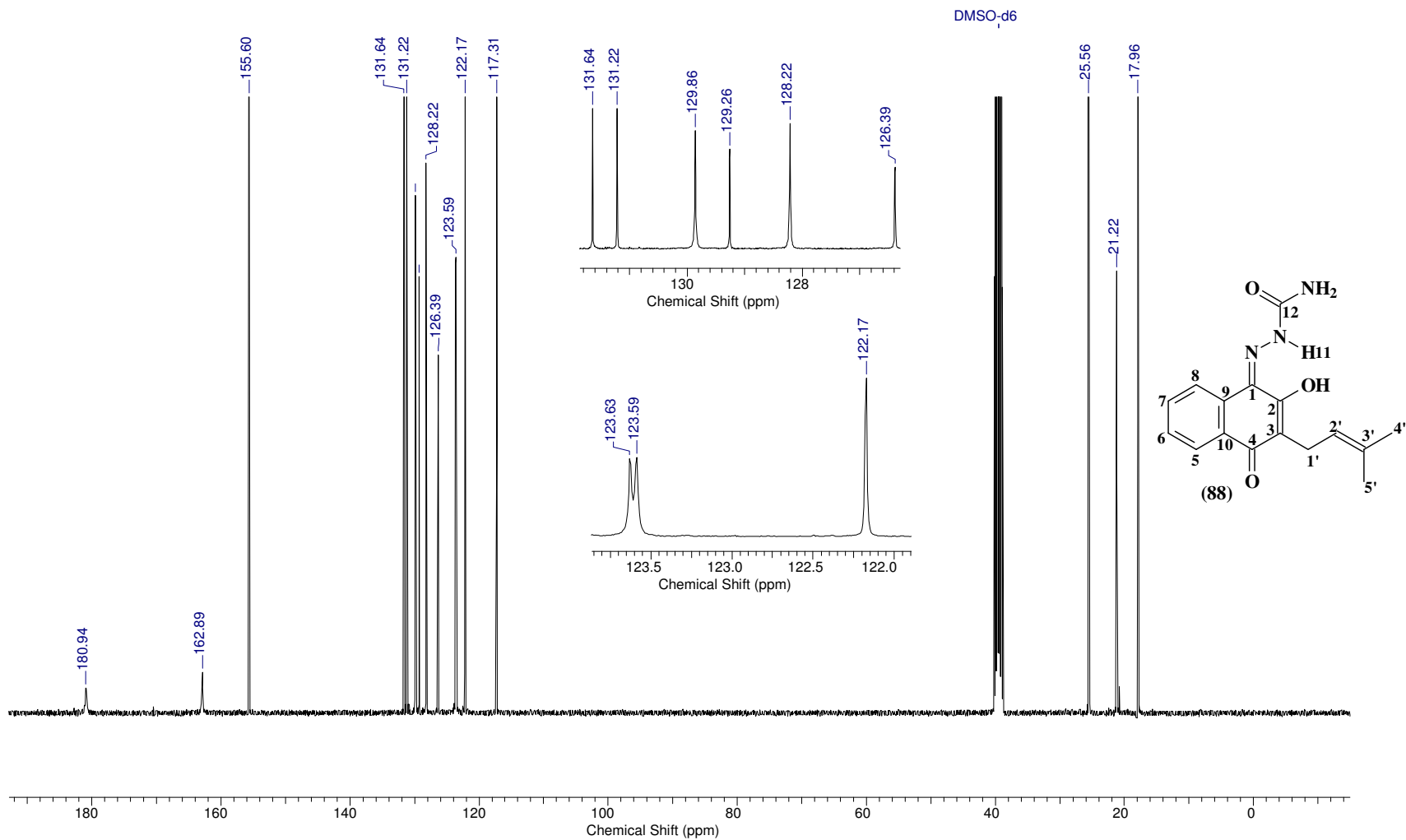
Espectro 136: EM-ES íons negativos do composto **88**.



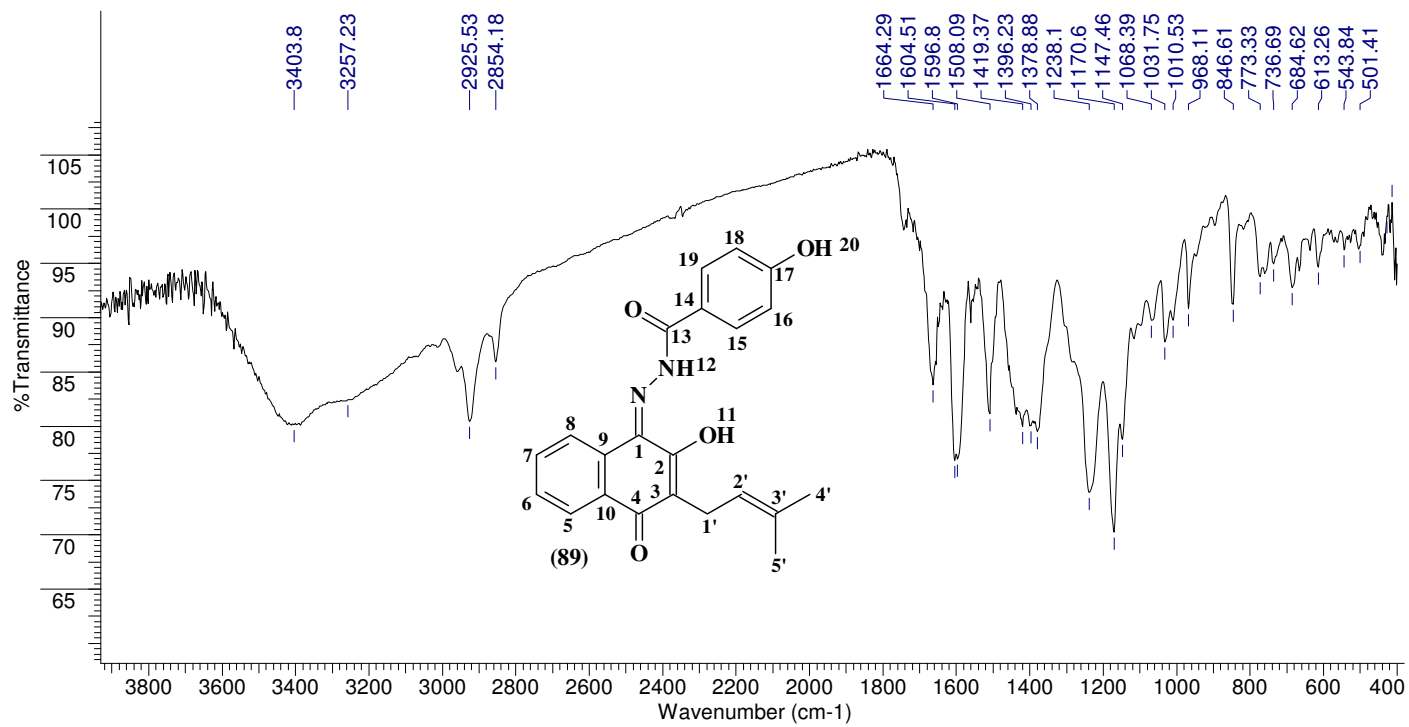
Espectro 137: RMN ¹H do composto **88** em DMSO.



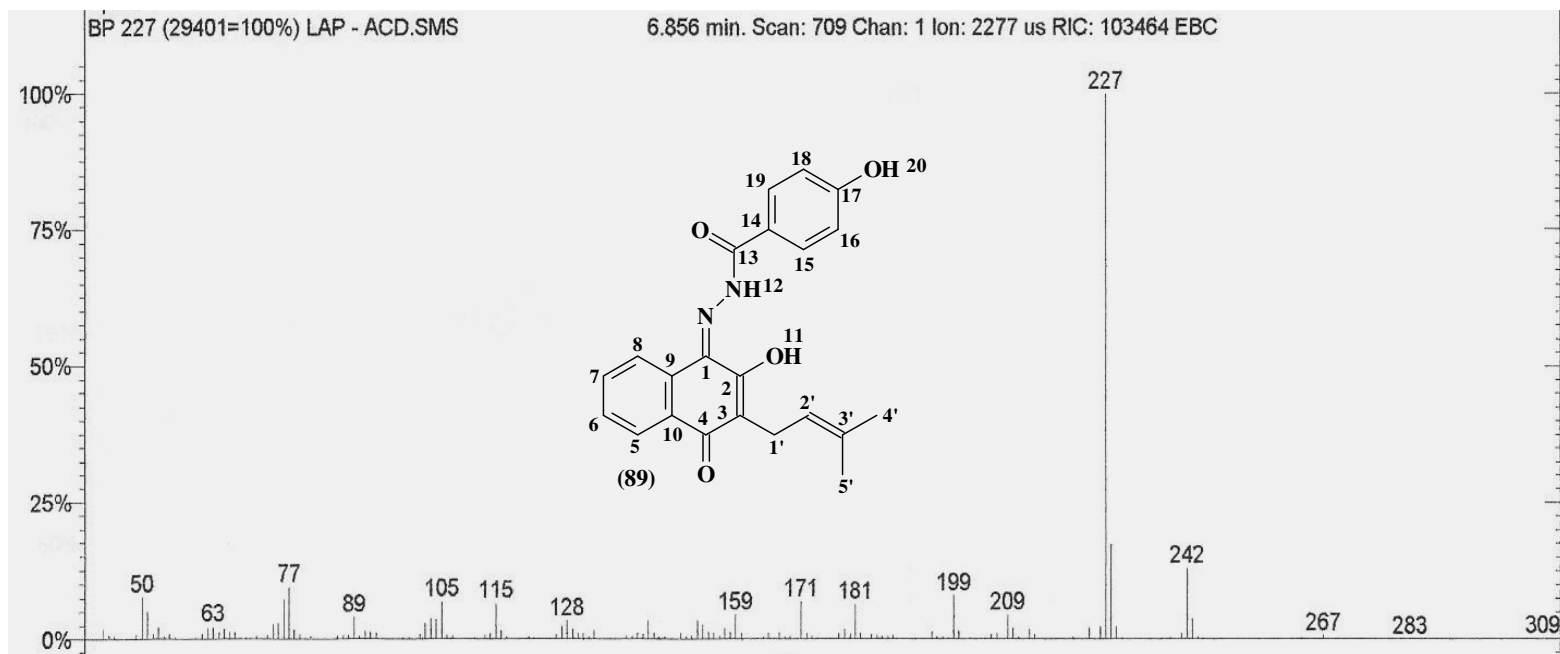
Espectro 138: RMN ^1H do composto **88** em acetona deuterada.



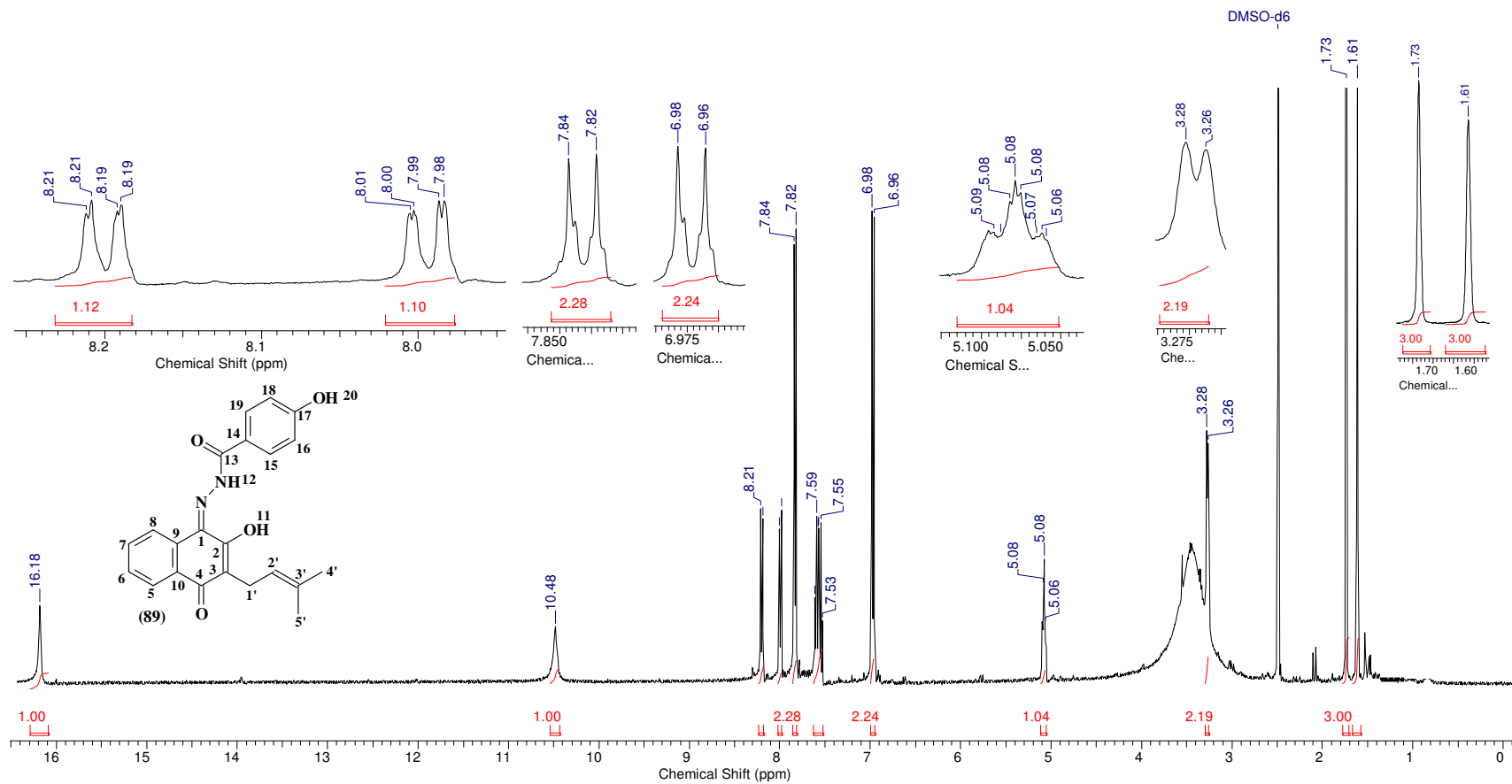
Espectro 139: RMN ¹³C do composto **88** em DMSO.



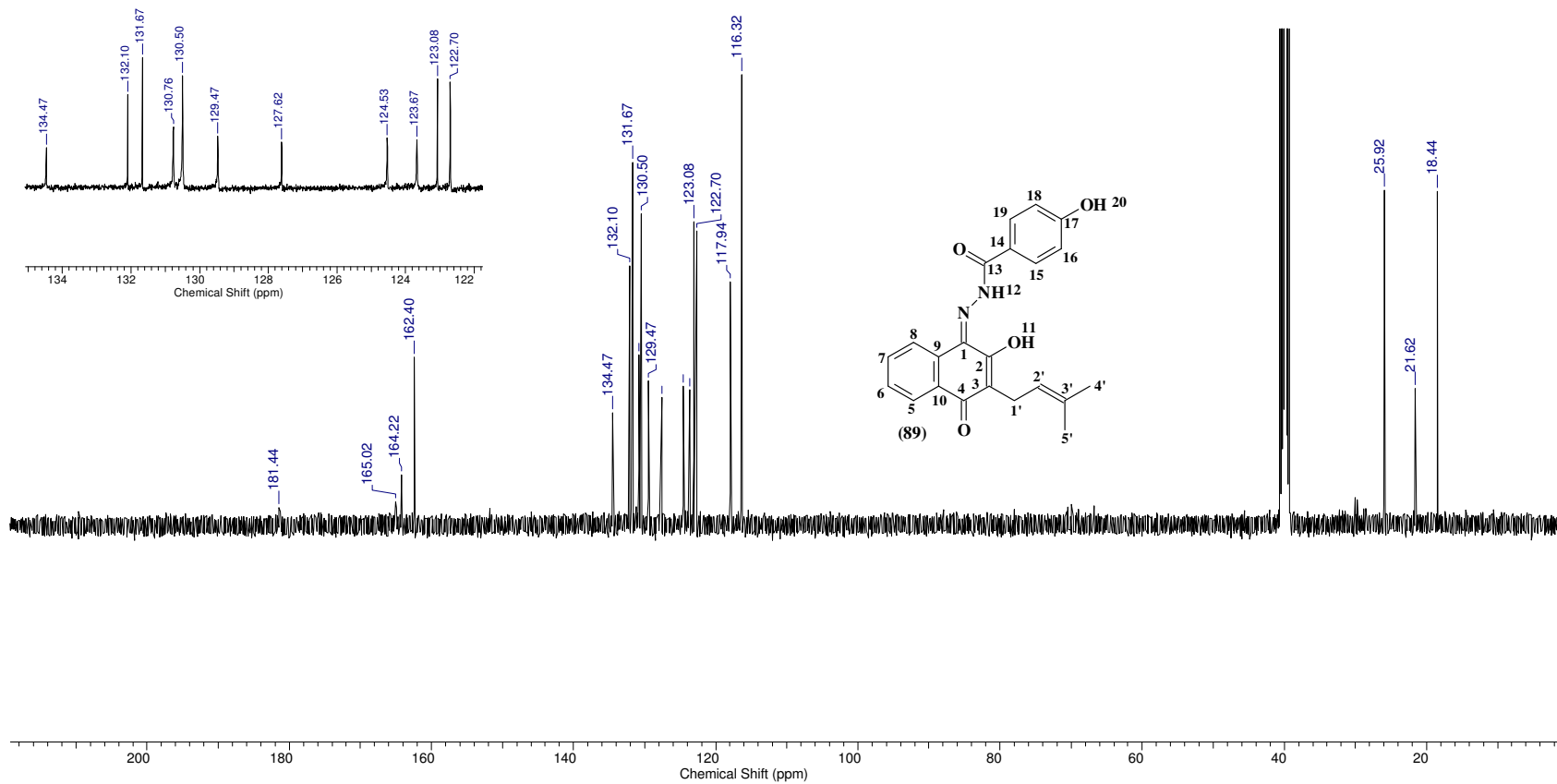
Espectro 140: IV do composto 89.



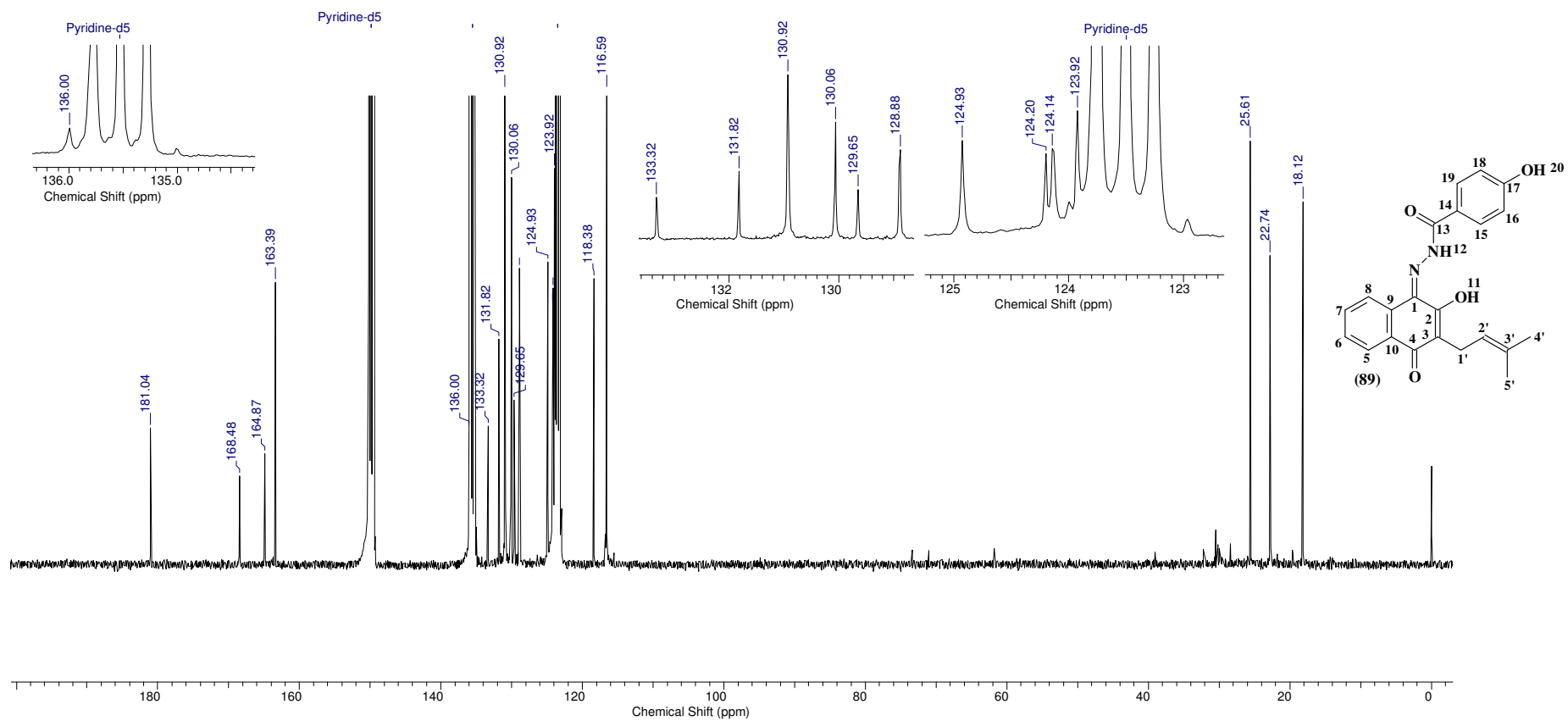
Espectro 141: E.M do composto **89**.



Espectro 142: RMN ¹H do composto 89 em DMSO.



Espectro 143: RMN ^{13}C do composto **89** em DMSO.



Espectro 144: RMN ^{13}C do composto **89** em piridina deuterada.