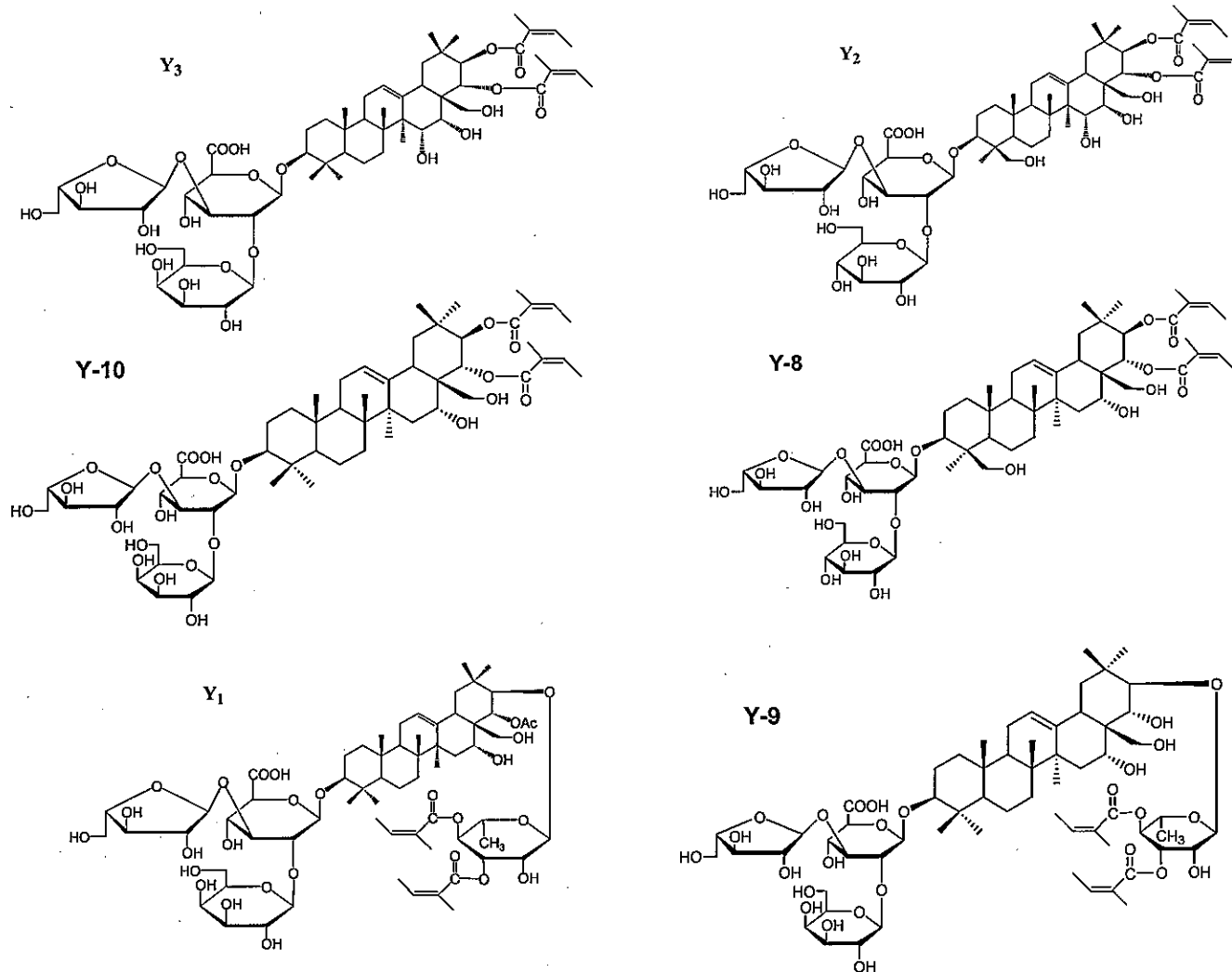


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Figure 1

Structure of six anticancer Saponins with biangeloyl groups (Y3 (Y), Y2, Y8, Y10, Y1 and Y9)

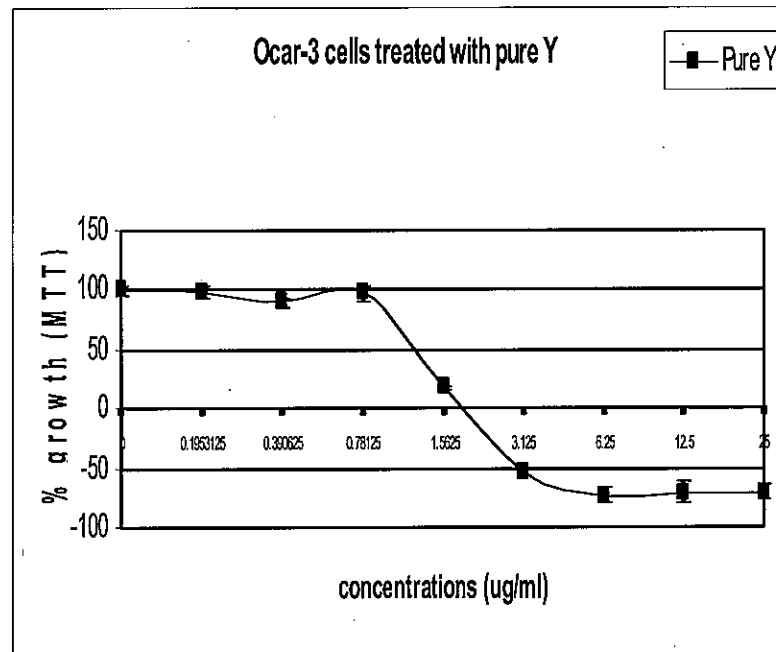


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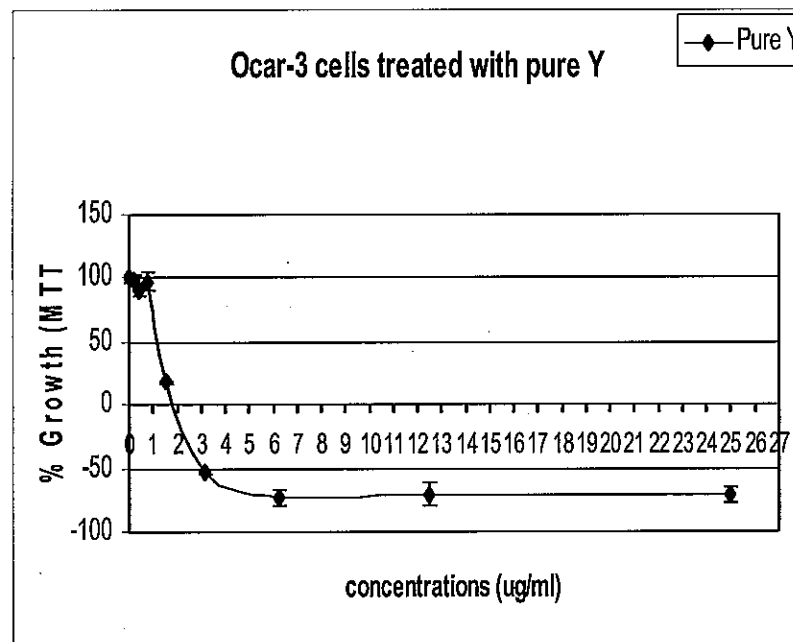
Figure 2

Anticancer activity of Compound Y

(A) Points graph



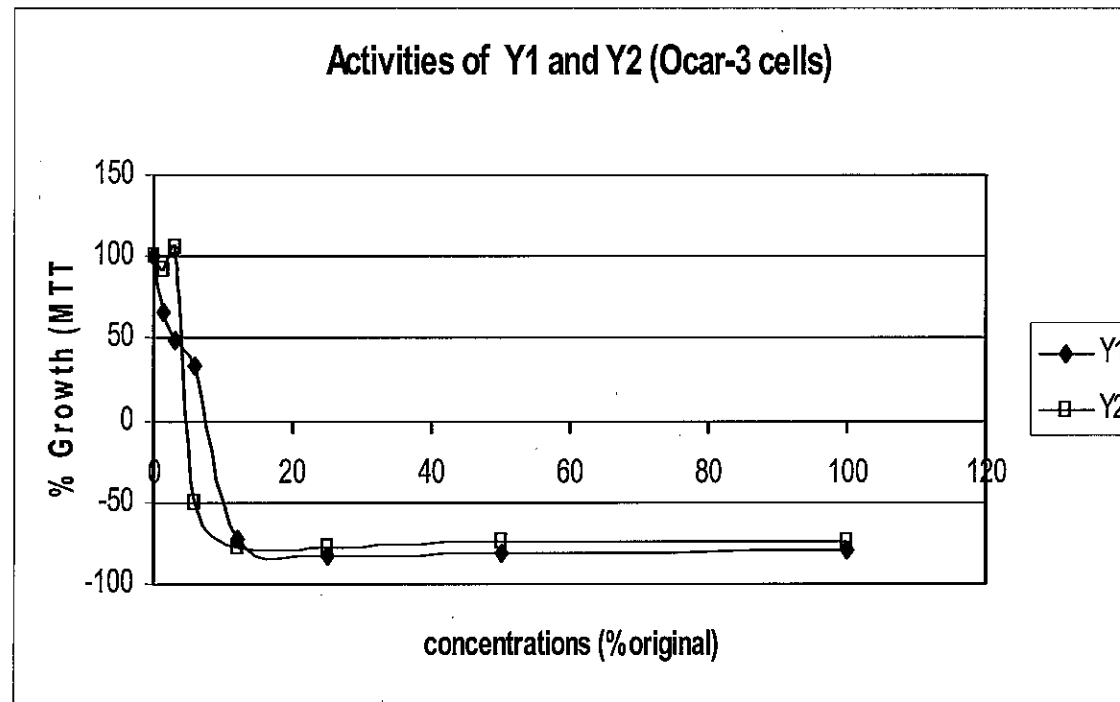
(B) X,Y linear graph



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Figure 3

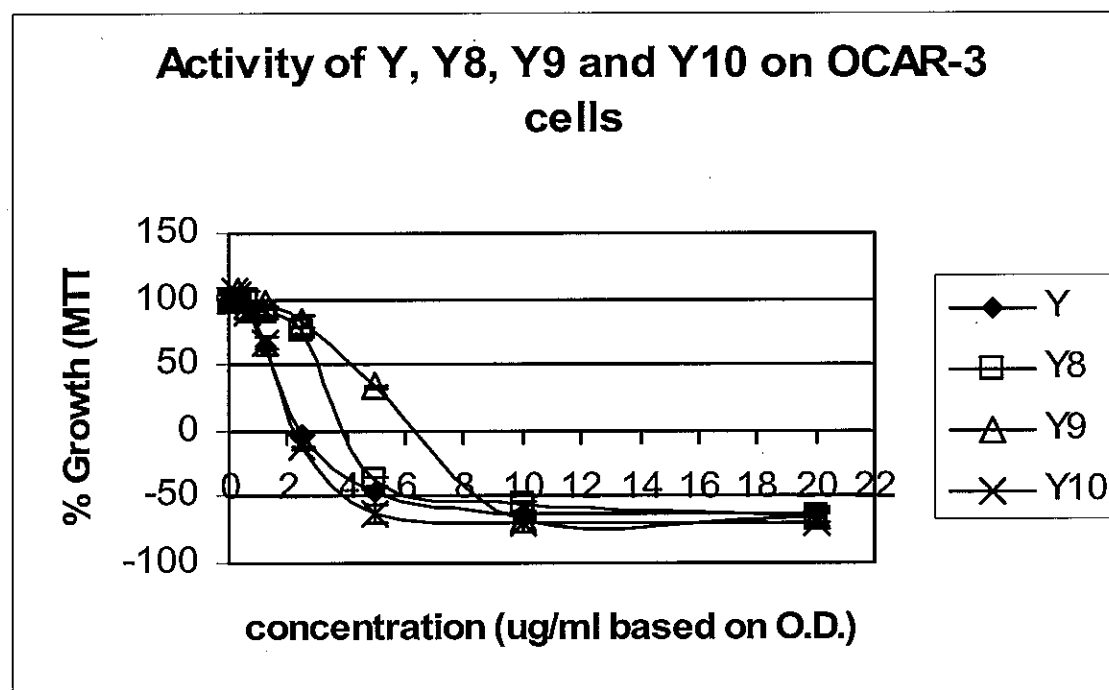
Y1 and Y2 activity on Ovarian caner cells



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Figure 4

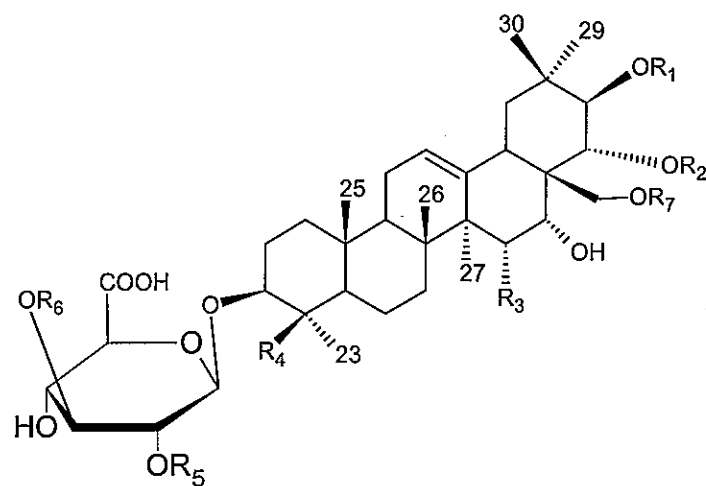
Anticancer activity of Compounds Y, Y8, Y9 and Y10.



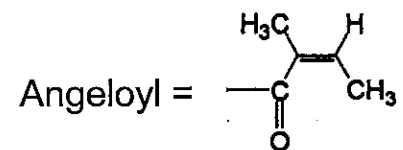
5/66

Figure 5

Consensus structure of compound Ys
(Y, Y2, Y8 and Y10)



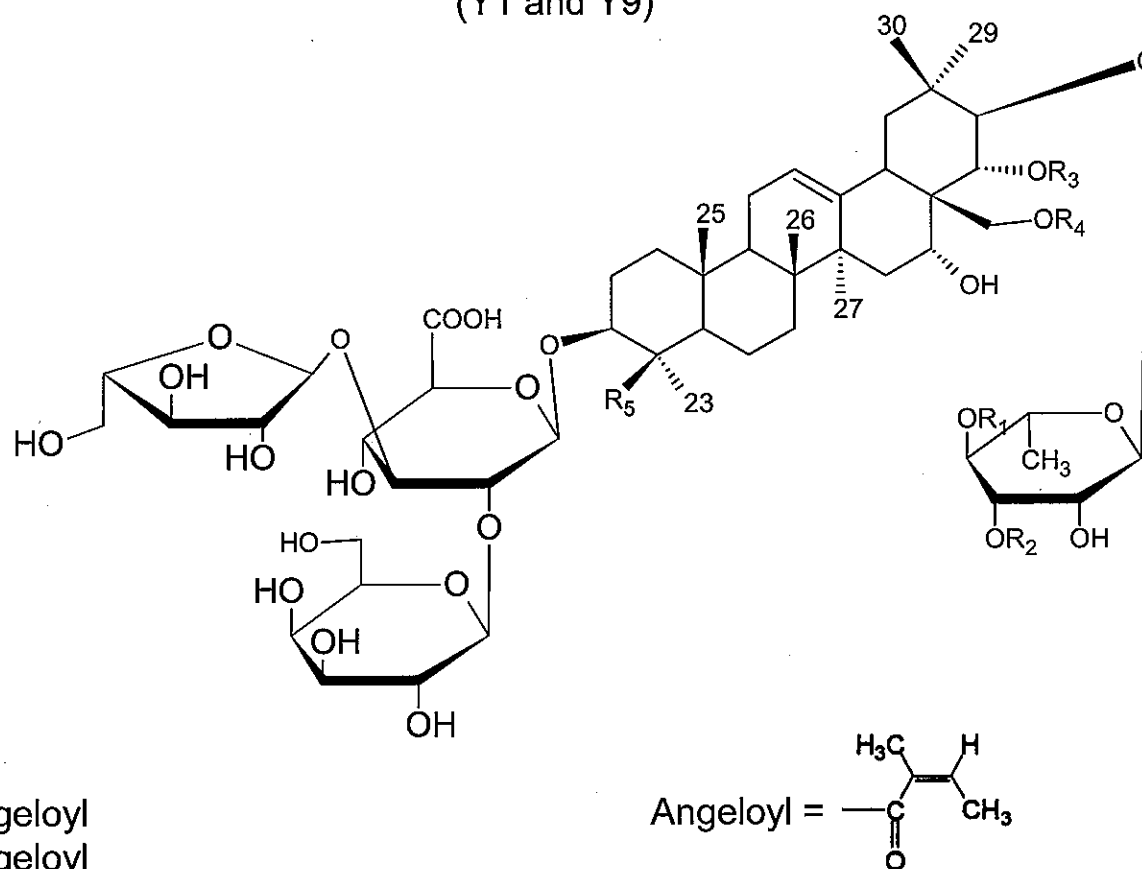
R1 = Angeloyl
R2 = Angeloyl
R3 = OH or H
R4 = CH₃ or CH₂OH
R5 = D- glucose, D-galactose



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Figure 6

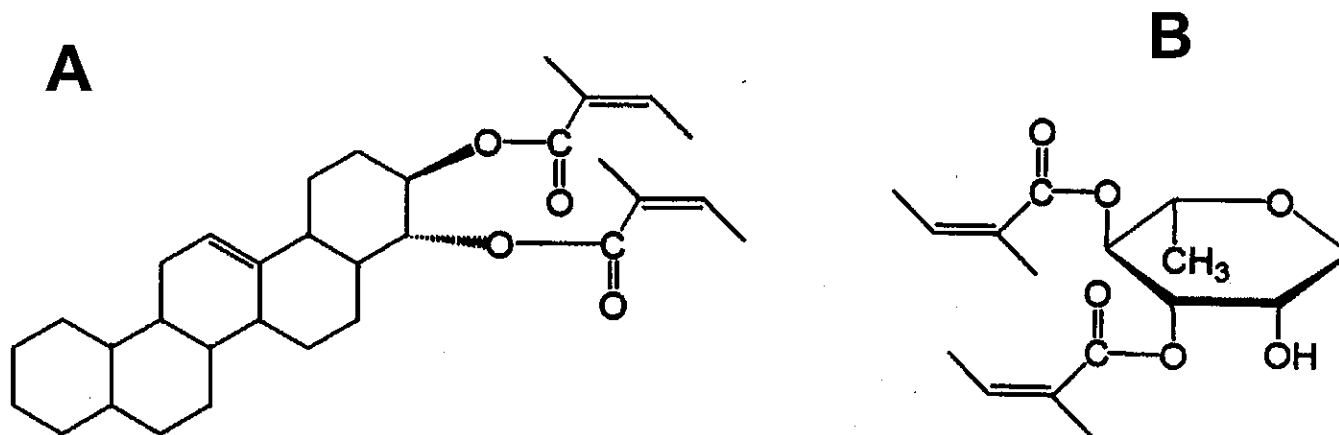
Consensus structure of Ys
(Y1 and Y9)



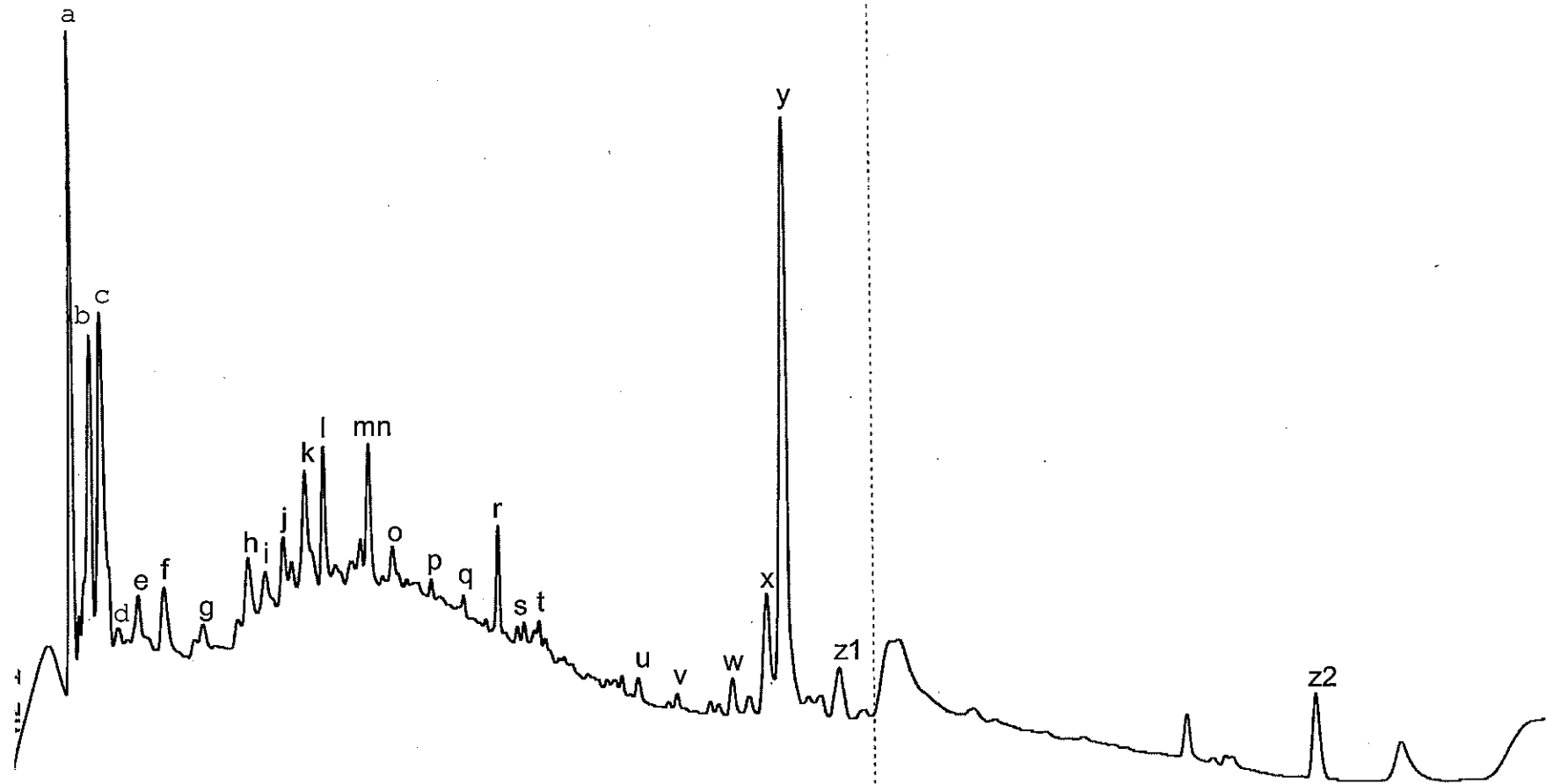
7/66

Figure 7

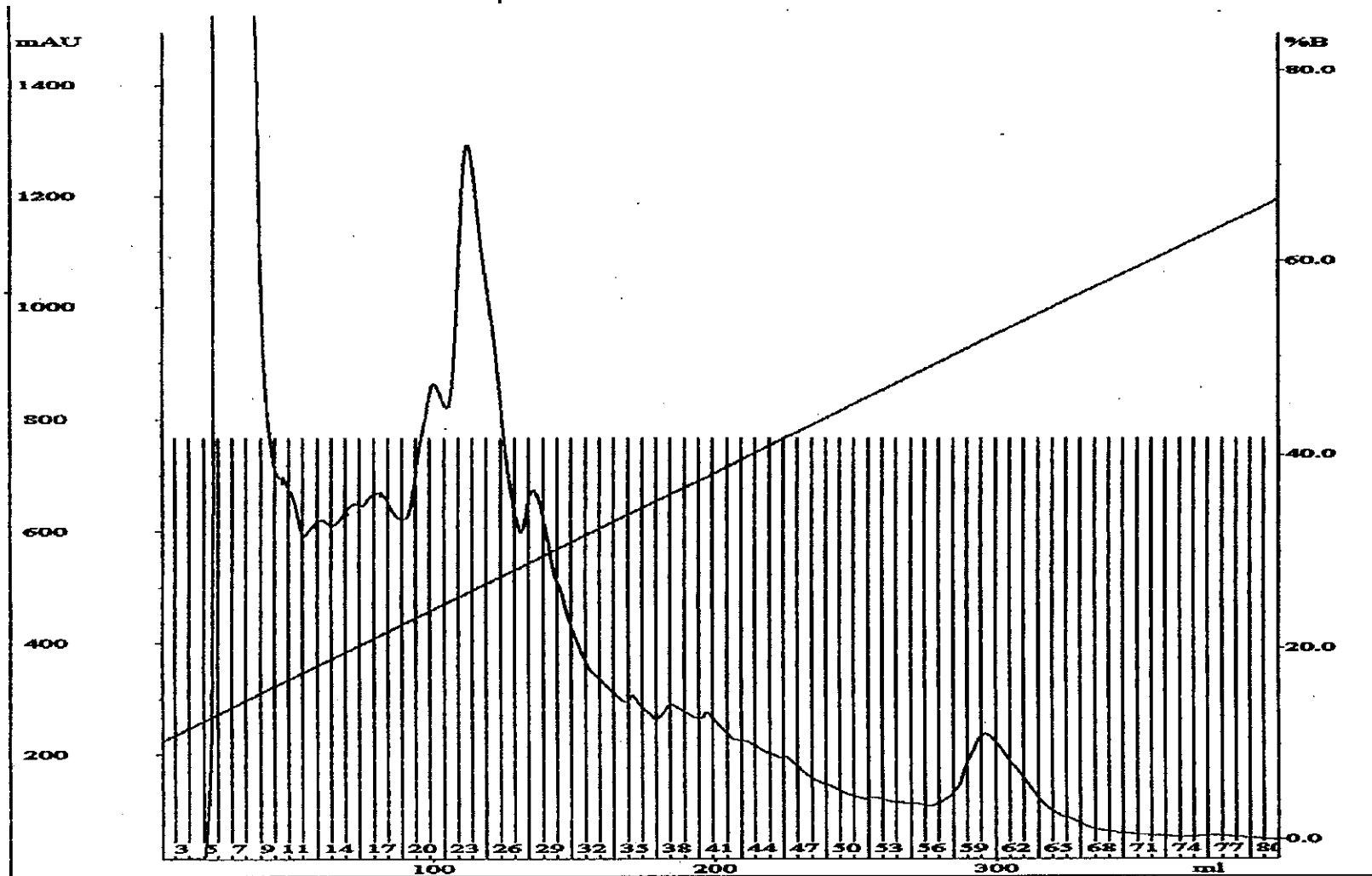
Biangeloyl group situated in trans-position on a structure.



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Figure 8



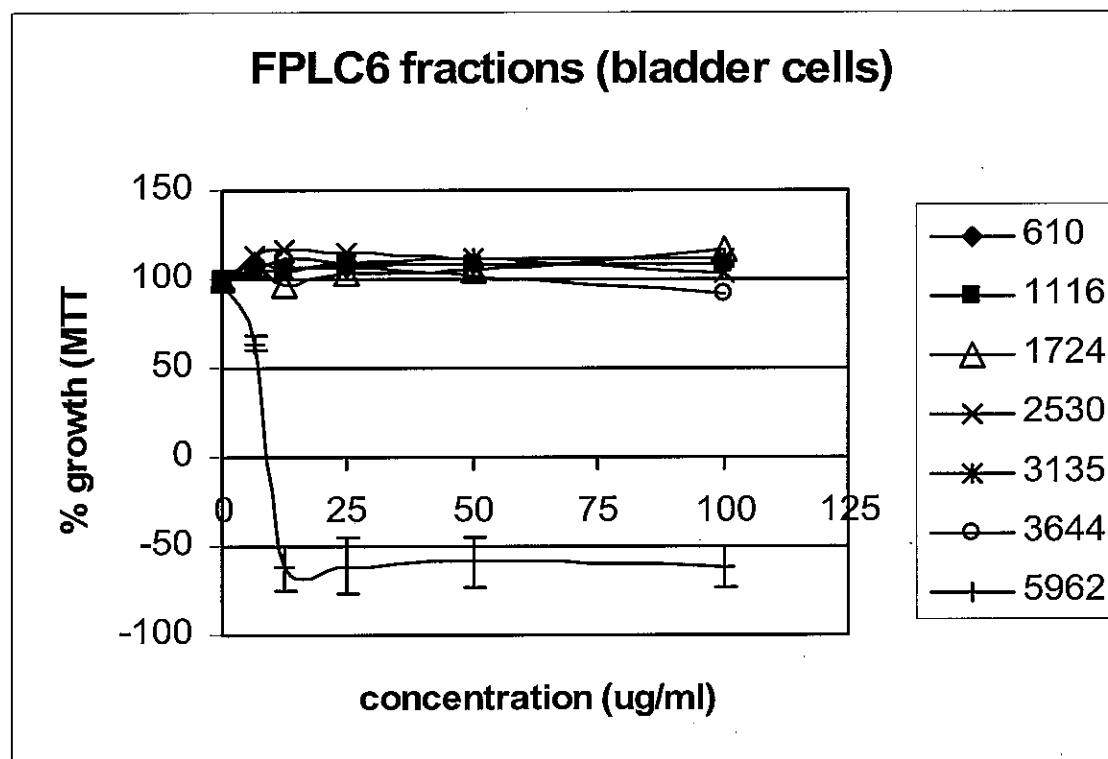
9/66
Figure 9
FPLC profile of Plant extract



10/66

Figure 10

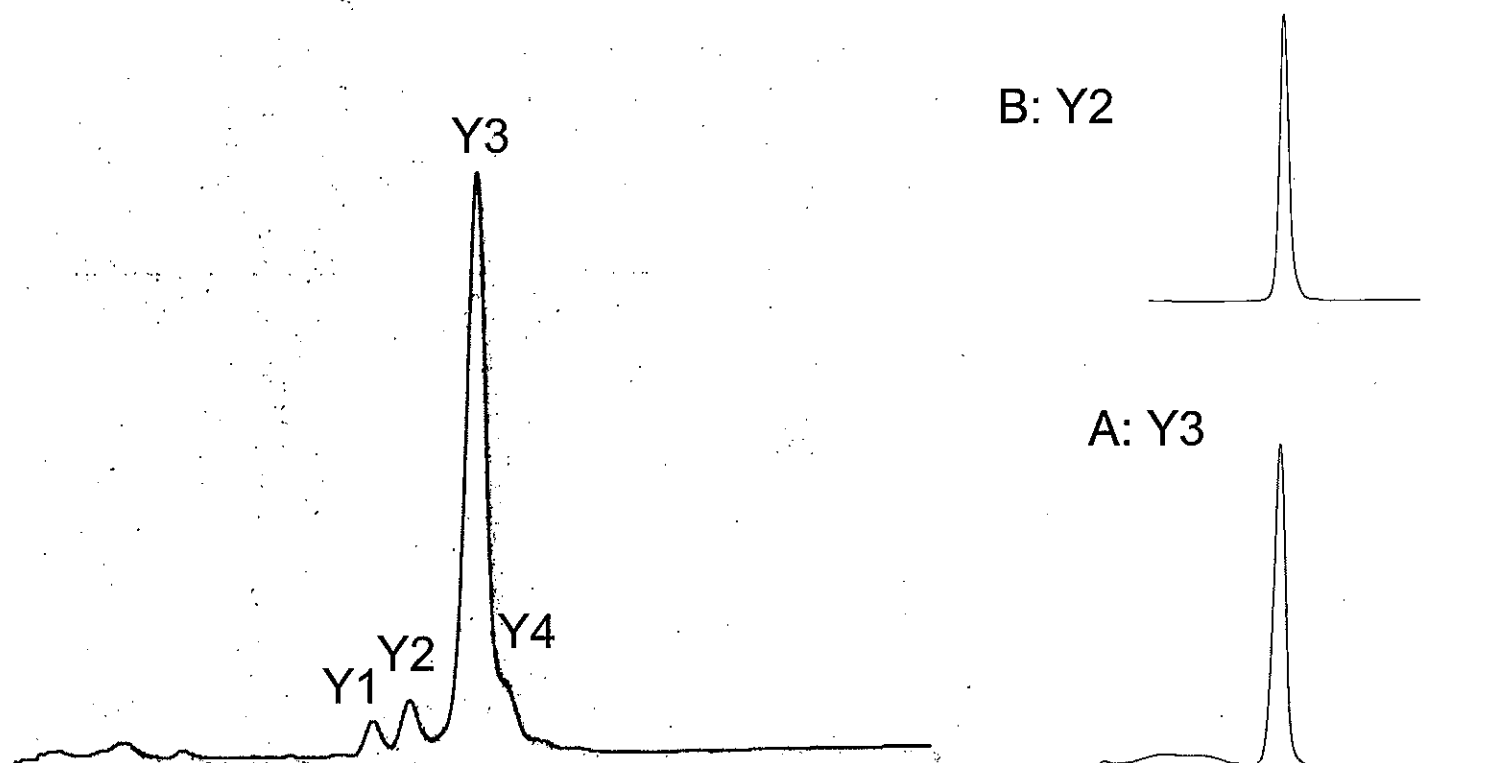
Cell growth activity of fractions of plant extract



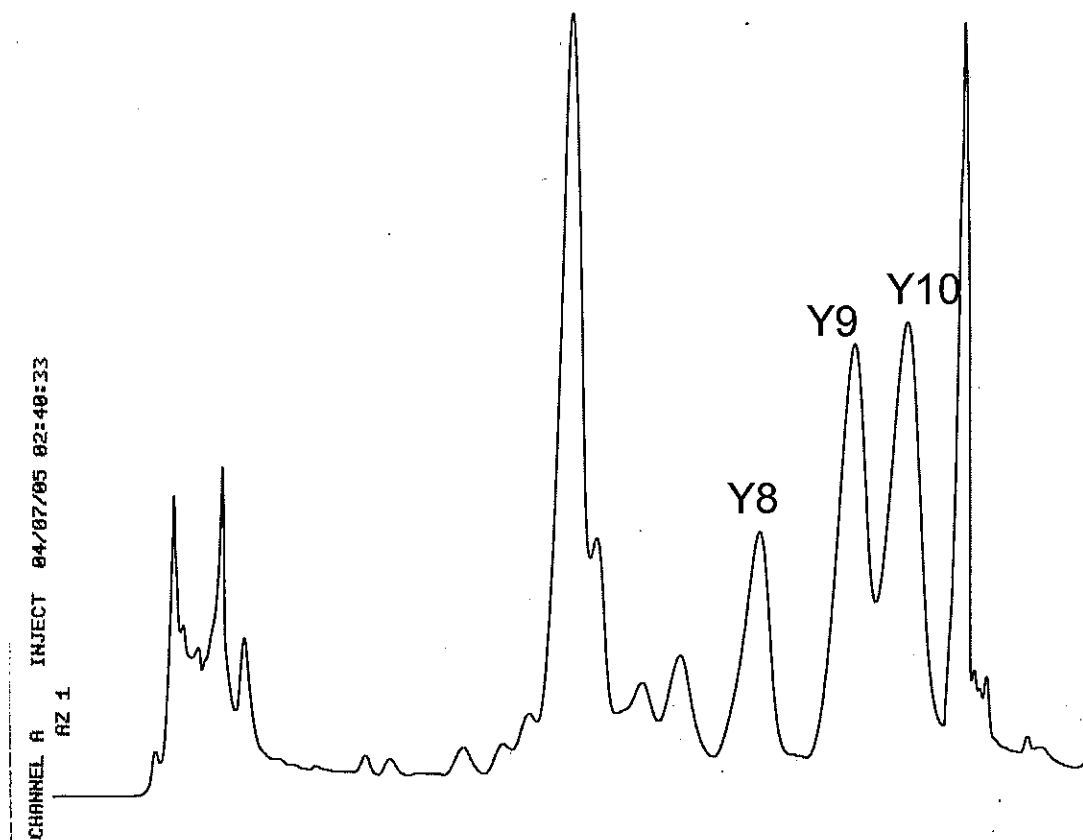
11/66

Figure 11

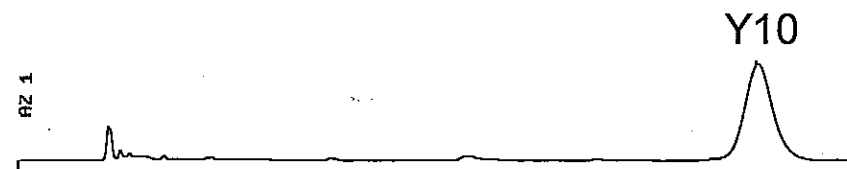
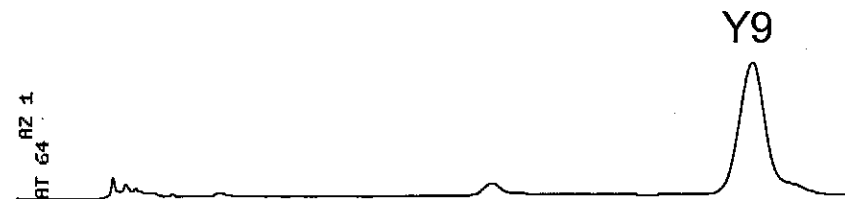
Purification of Factions Ys



12/66
Figure 12
Purification of Y8-Y10 with HPLC (iso-45)



13/66
Figure 13
Purity of Y8, Y9 and Y10

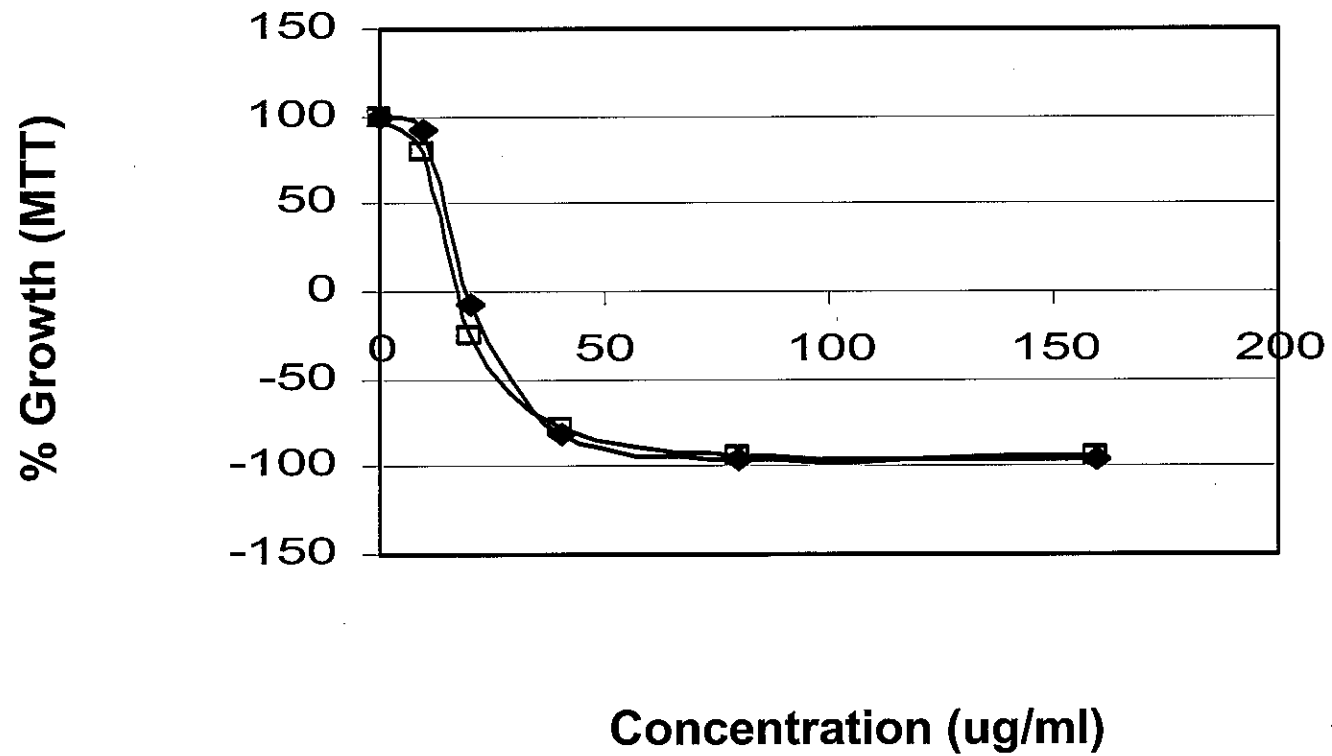


14/66

Figure 14

Inhibition of Ovarian cancer growth by plant extract

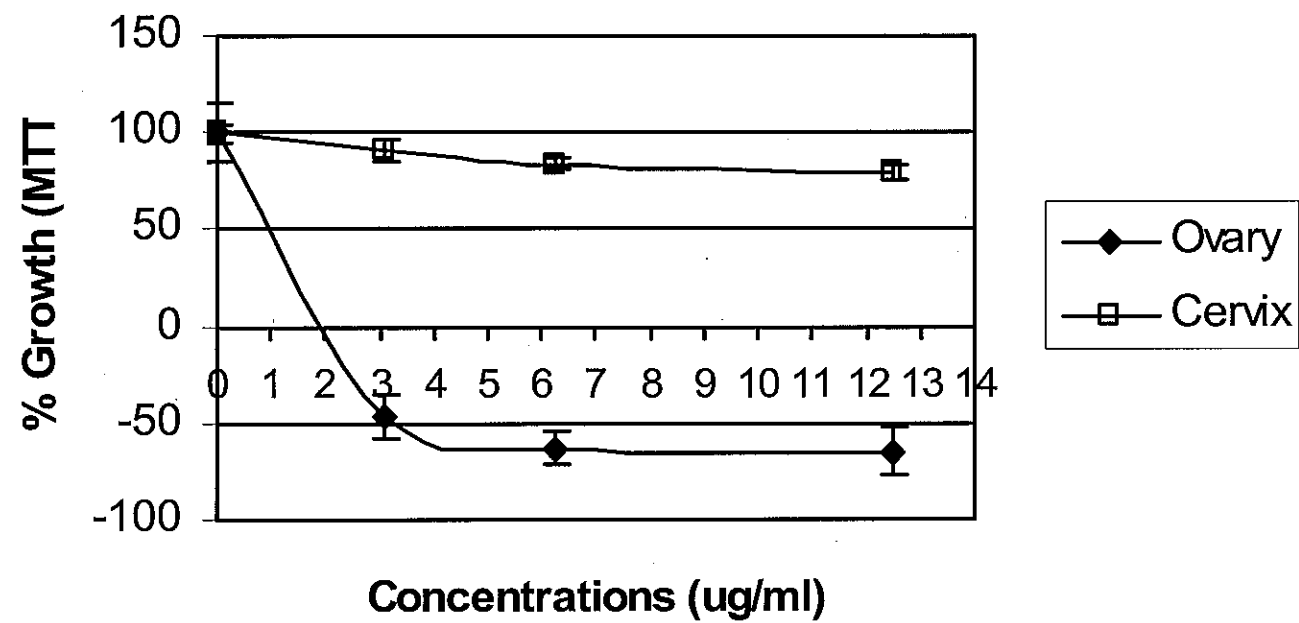
Most Sensitive: Ovary



15/66

Figure 15

Comparison of Potency of Y in ovary and cervix cancer cells



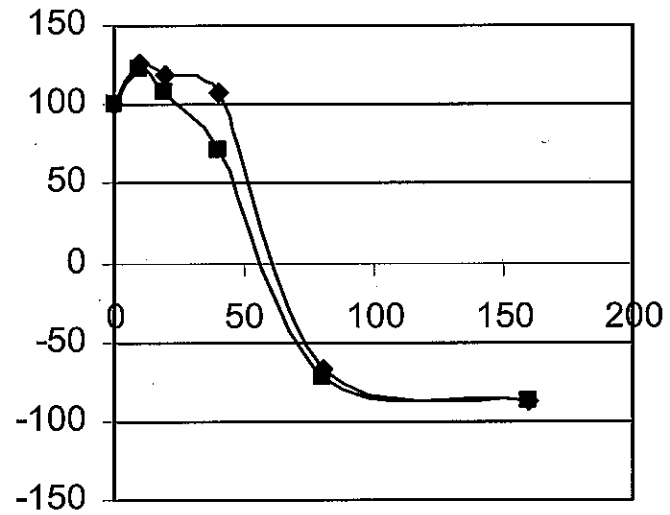
16/66

Figure 16A

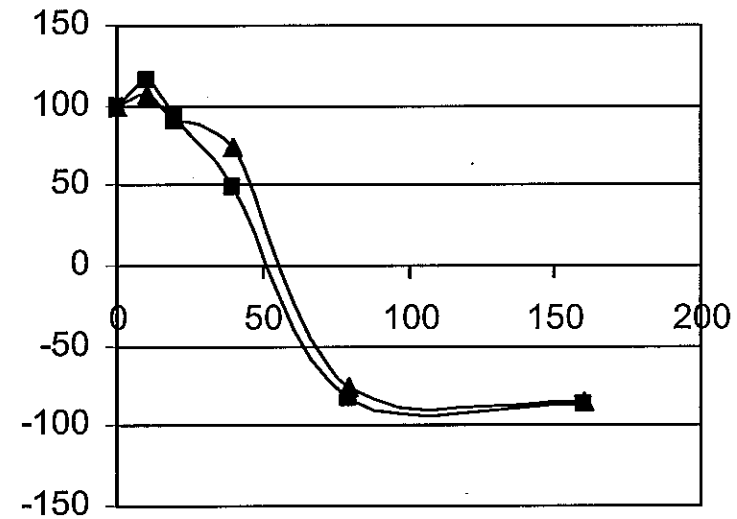
Growth curve of cancer cells after treatment with extract

Sensitive

Bladder



Bone



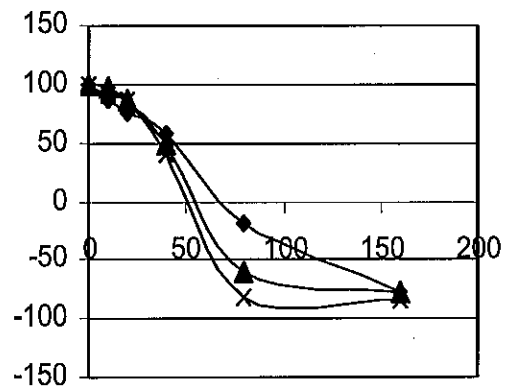
17/66

Figure 16B

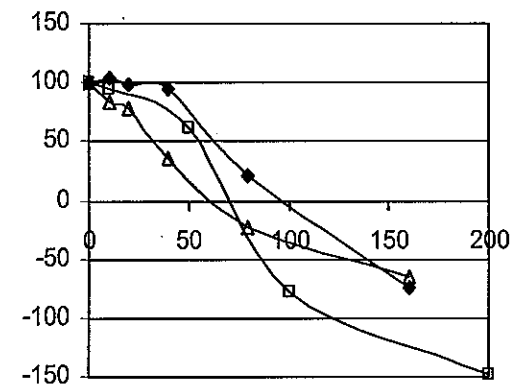
Growth curve of cancer cells after treatment with extract

Semi-sensitive

Leukocyte



liver



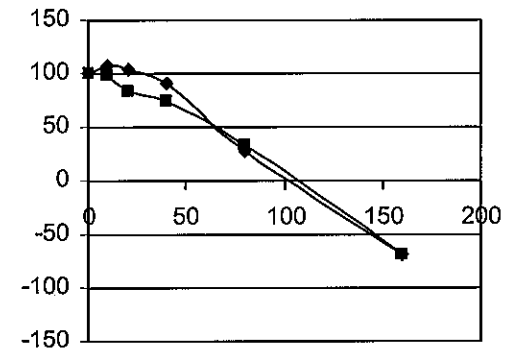
18/66

Figure 16C

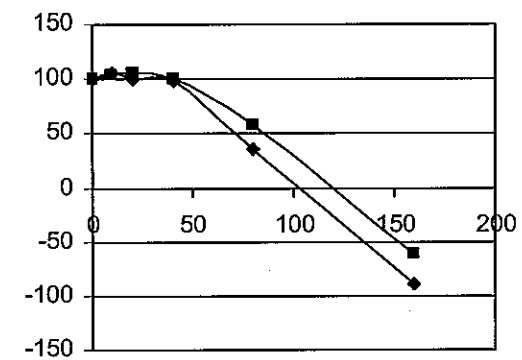
Growth curve of cancer cells after treatment with extract

Semi-sensitive

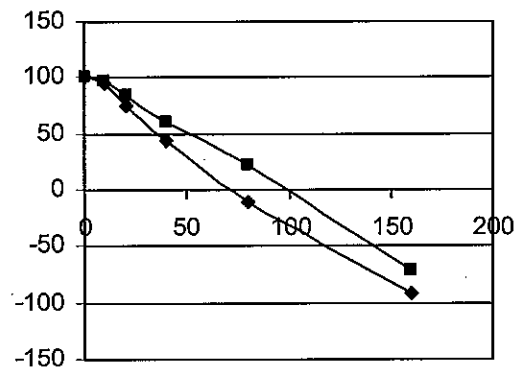
Breast



Brain



Prostate



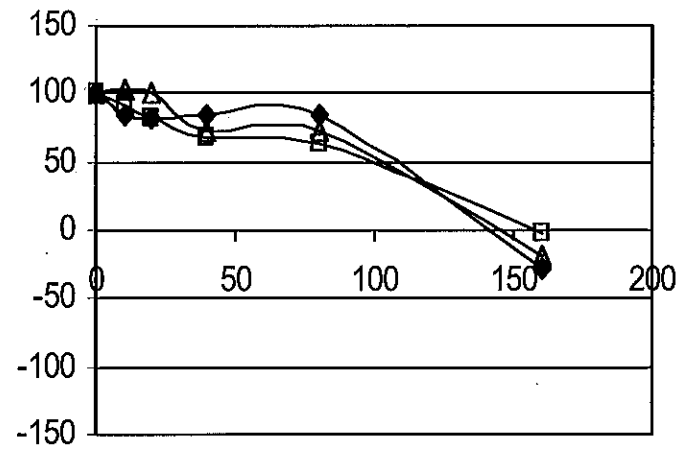
19/66

Figure 16D

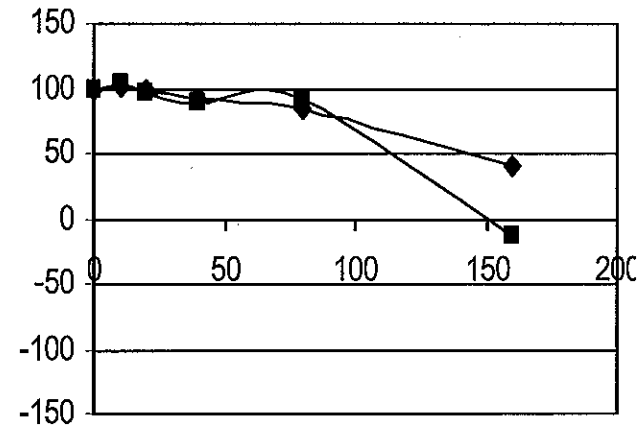
Growth curve of cancer cells after treatment with extract

Least sensitive

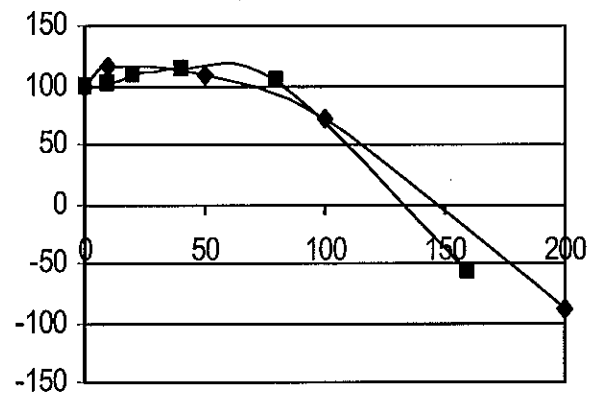
Colon



Cervix



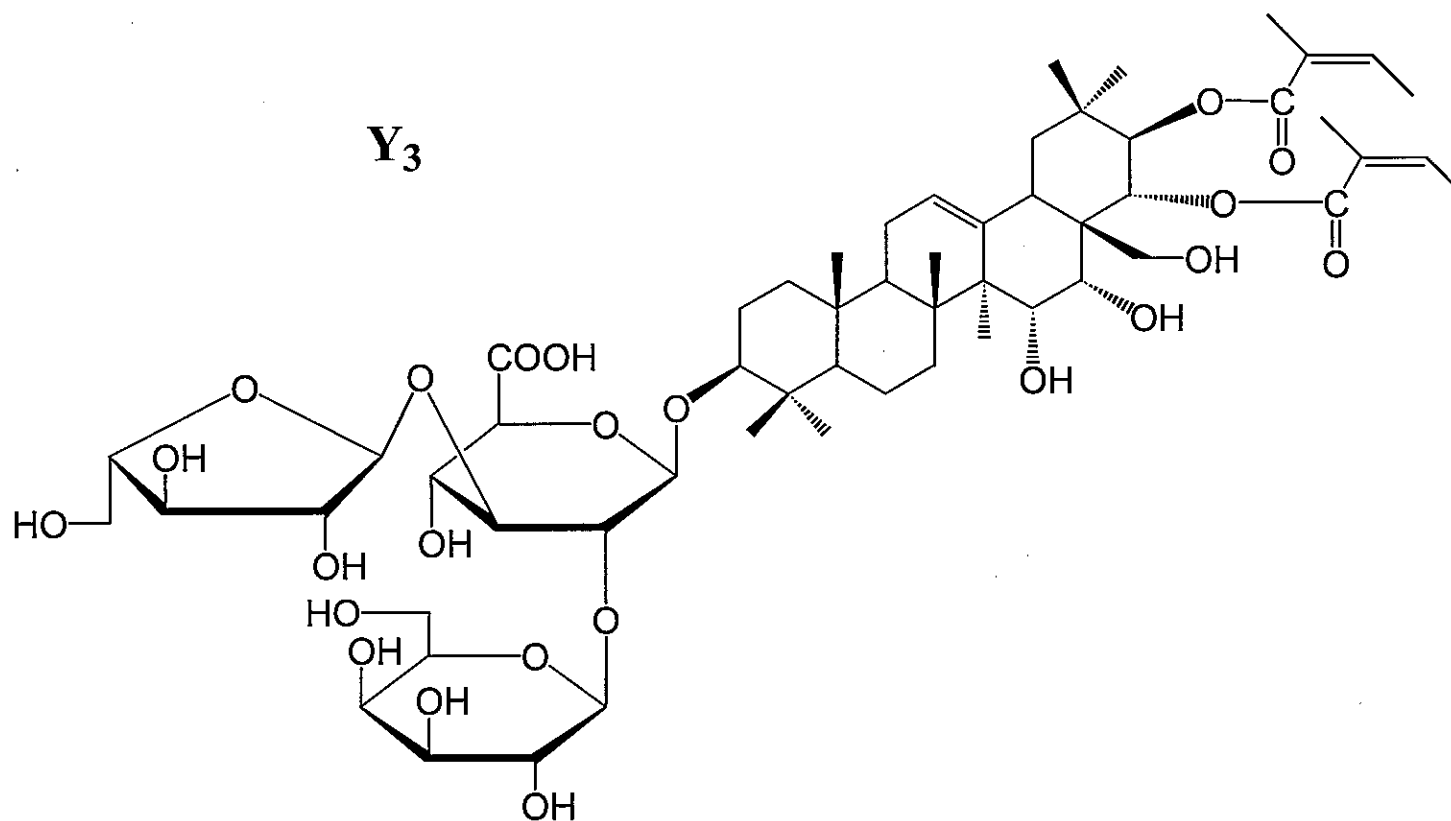
Lung



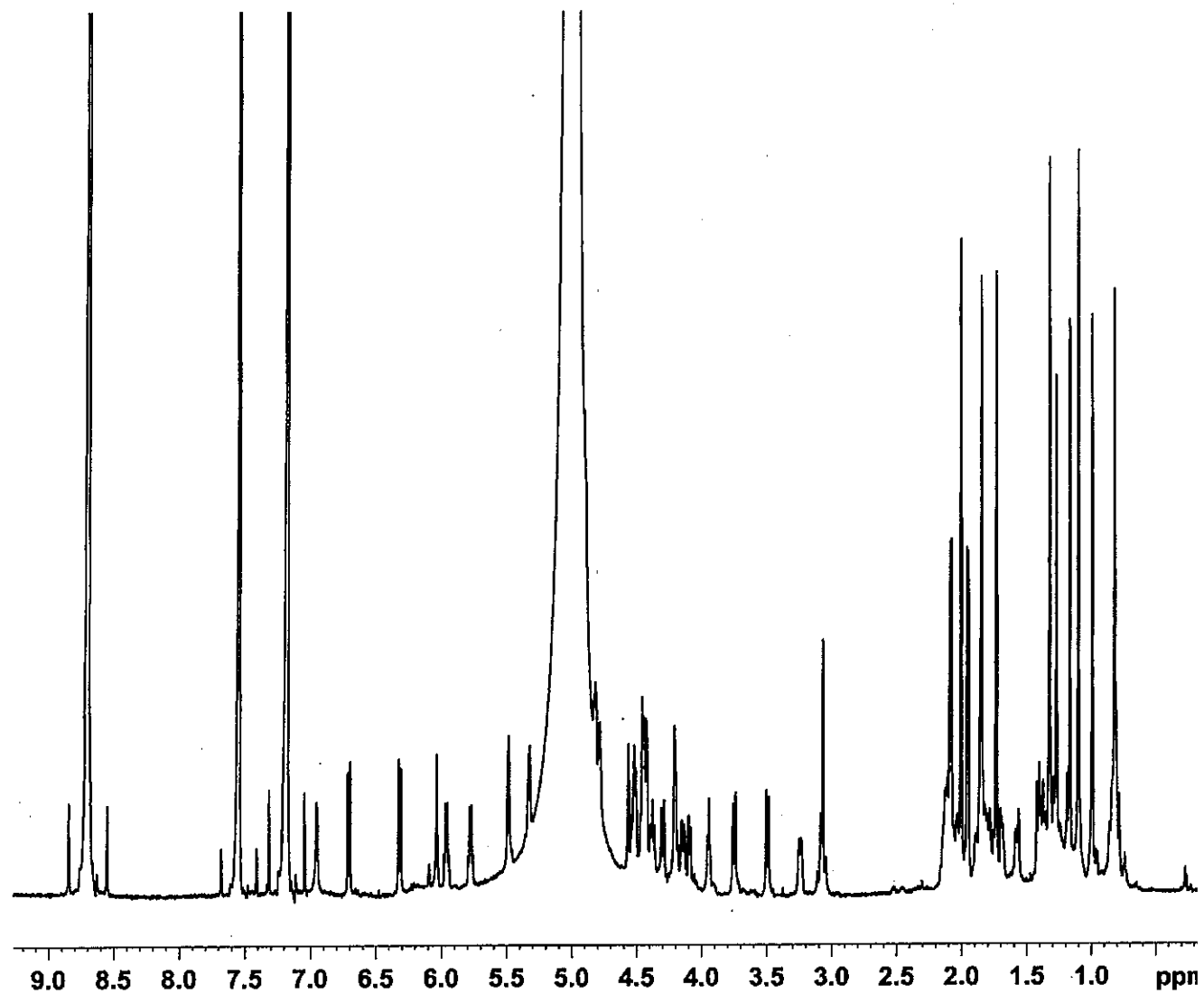
20/66

Figure 17

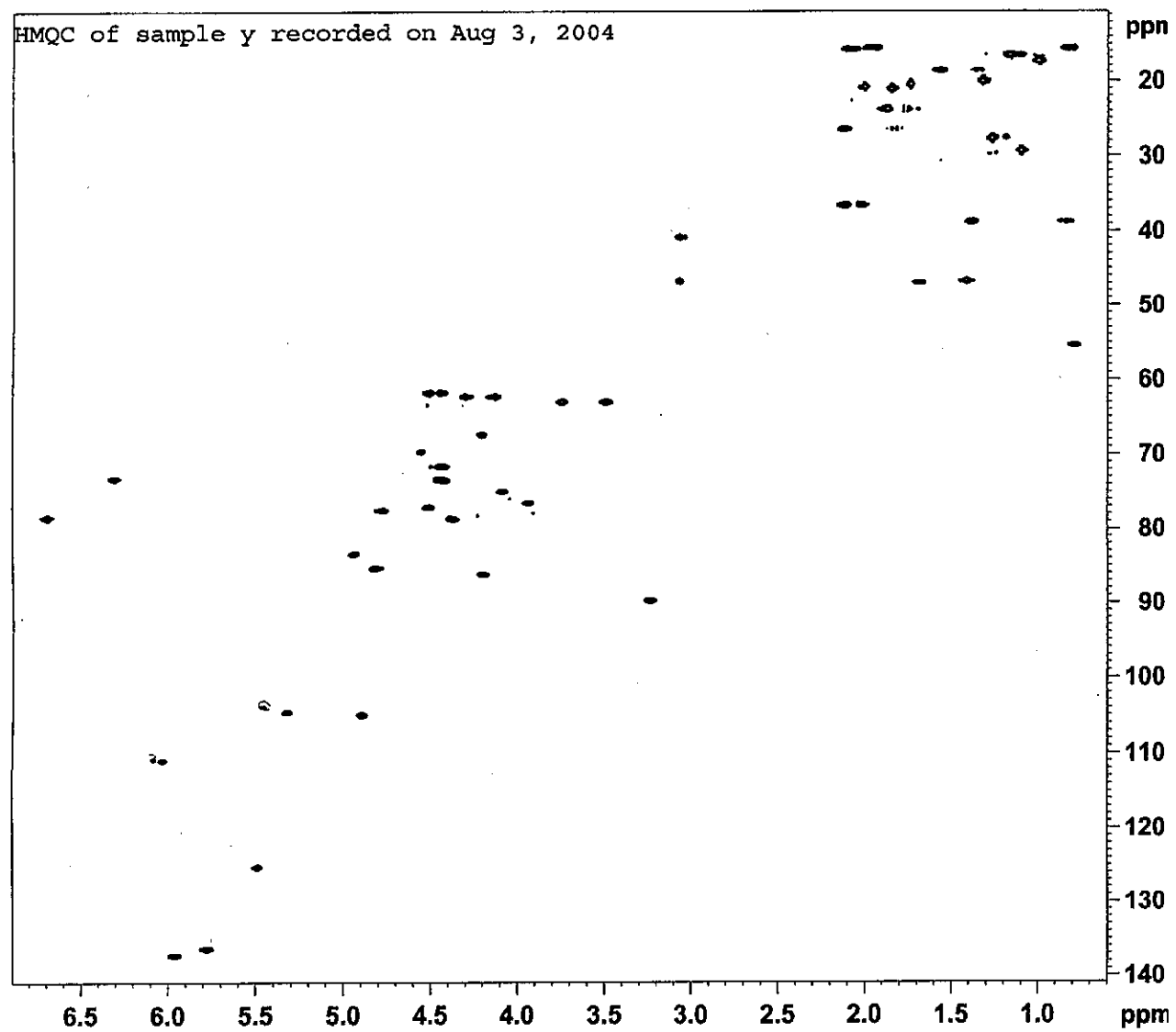
Chemical Structure of compound Y (Y3)



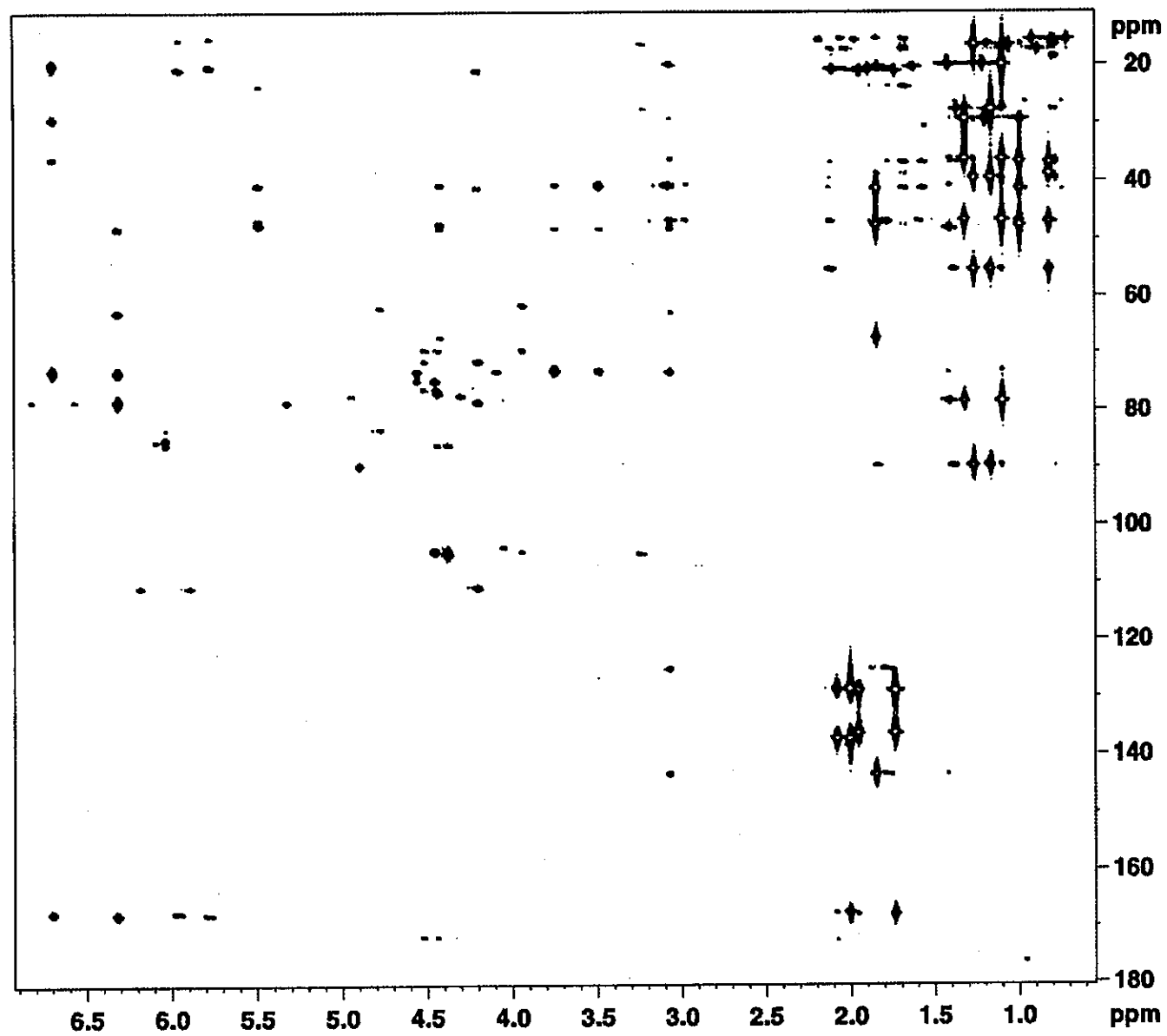
21/66
Figure 18
Proton NMR of Y



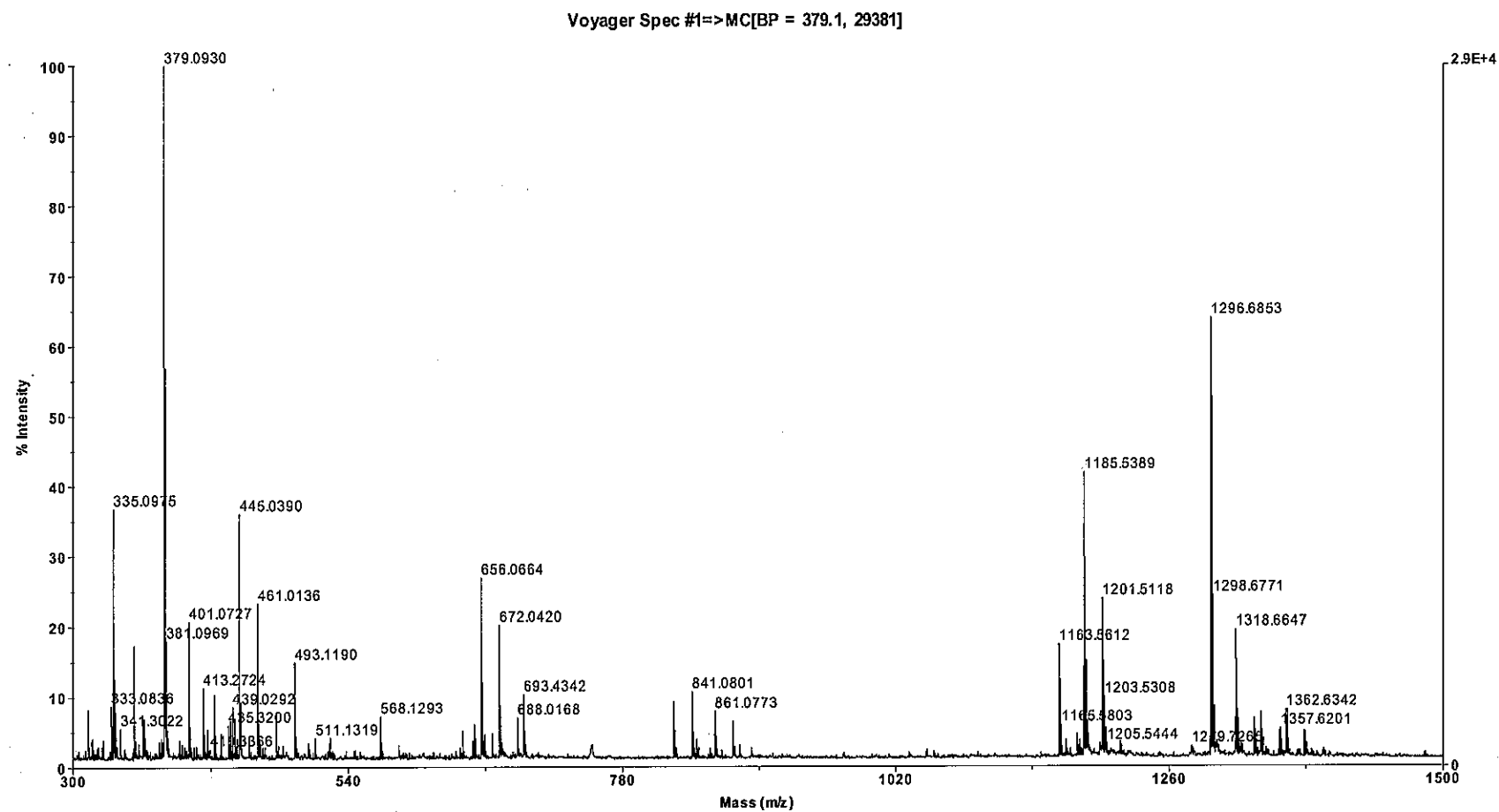
22/66
Figure 19
2D NMR (HMQC) of Y



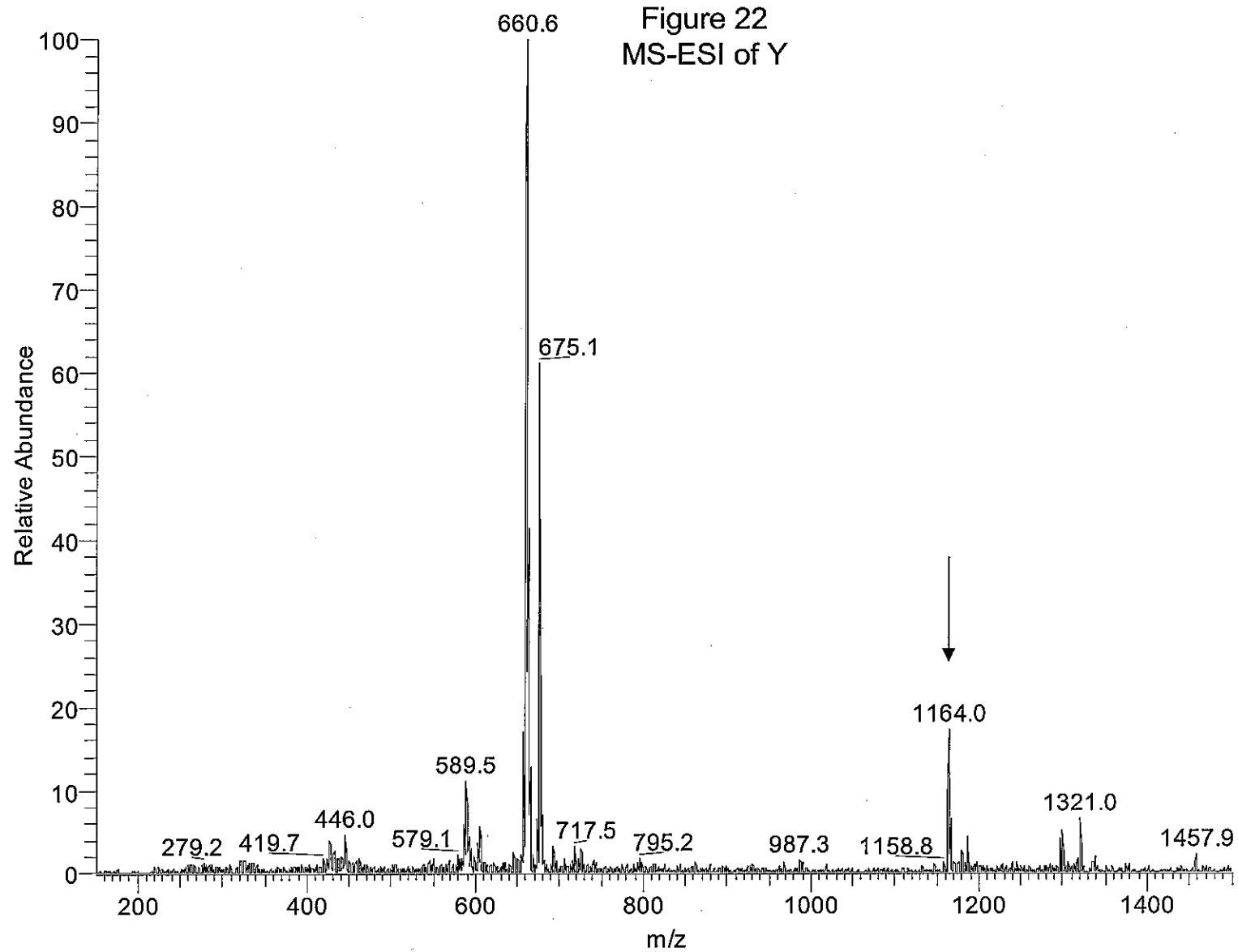
23/66
Figure 20
HMBC of Y

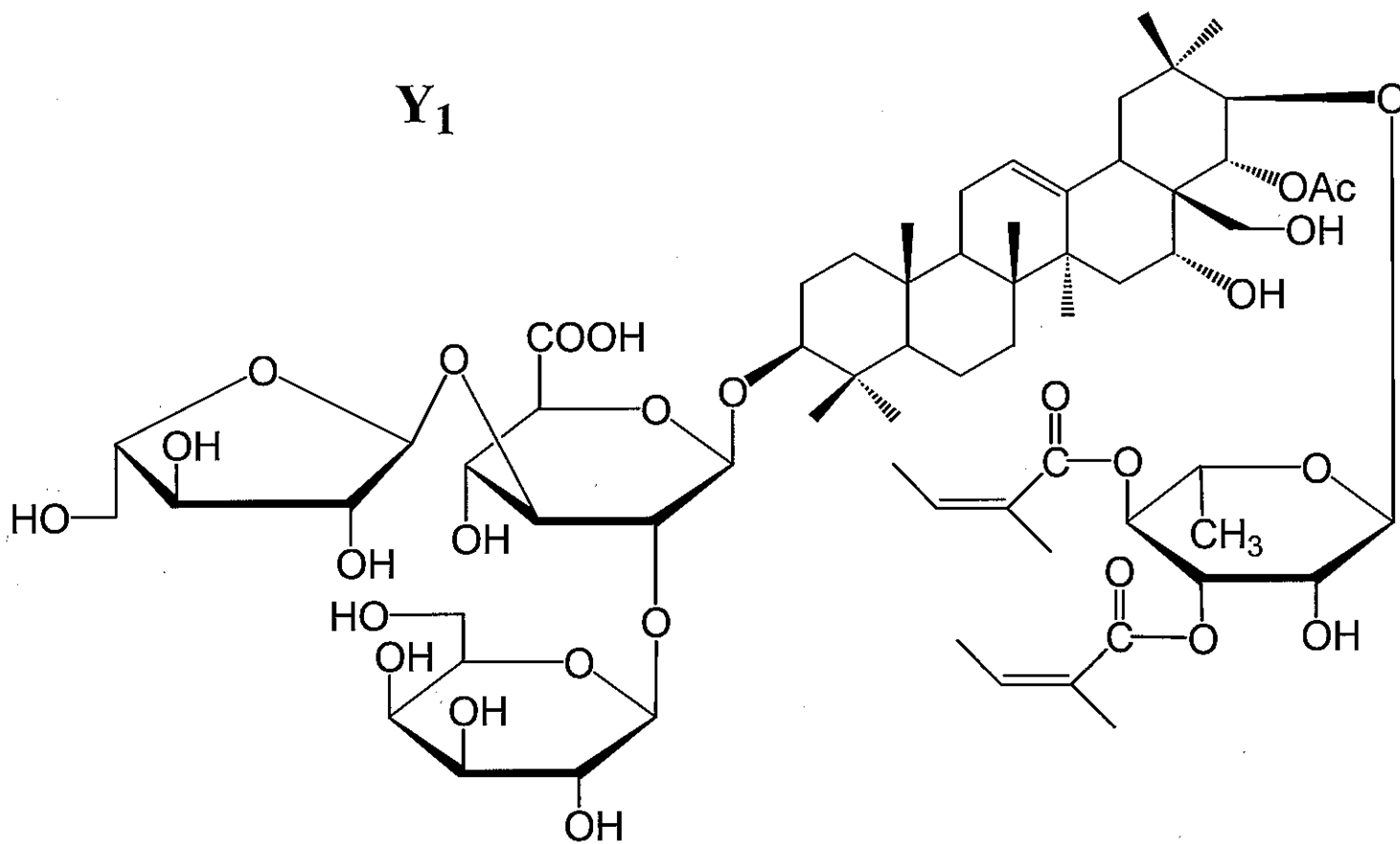


24/66
Figure 21
MS (MALDI-TOF) of Y
Y + Matrix (CHCA) + Angiotensin 1 "two point Calibration"

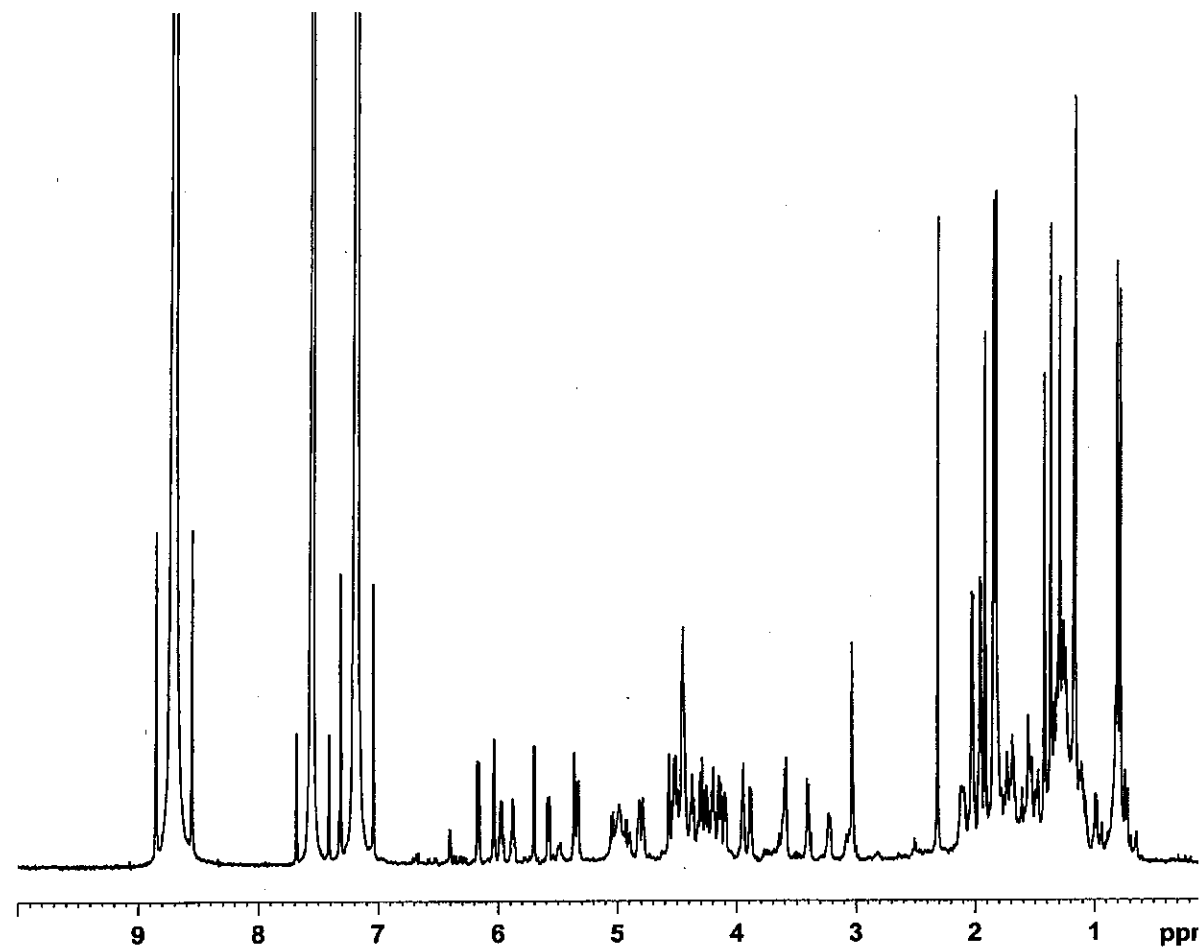


25/66
Figure 22
MS-ESI of Y

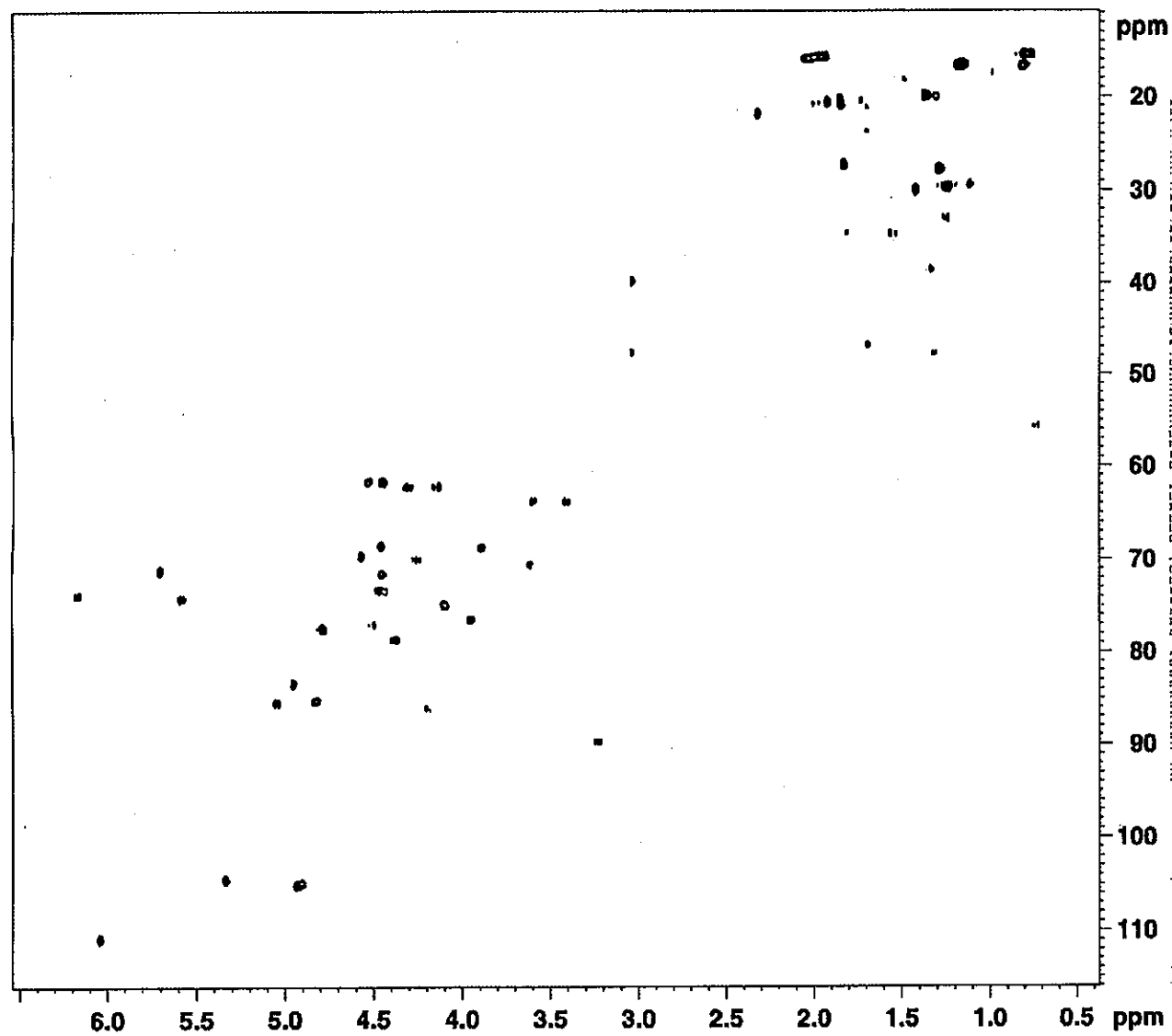




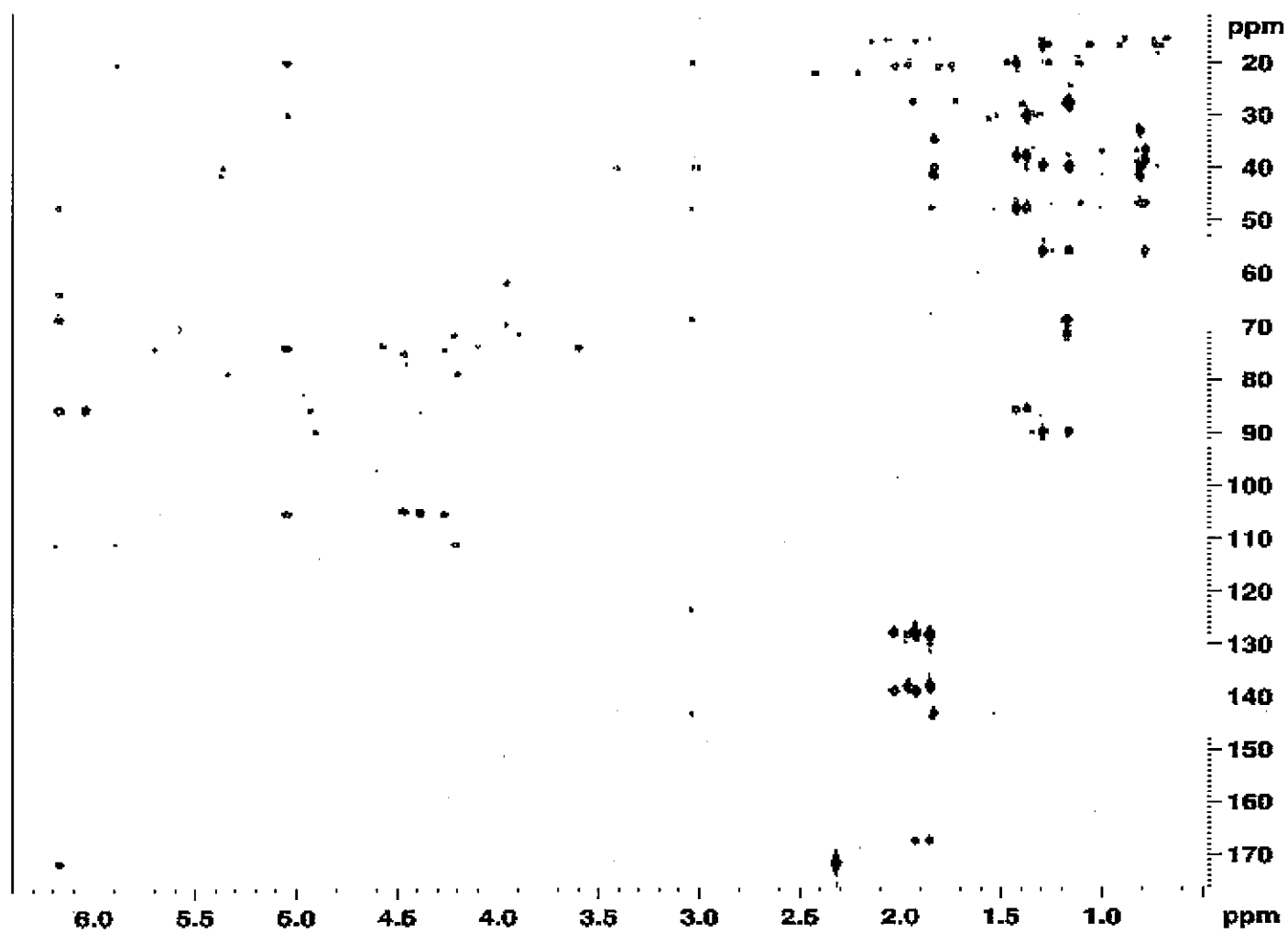
27/66
Figure 24
Proton NMR of Y1



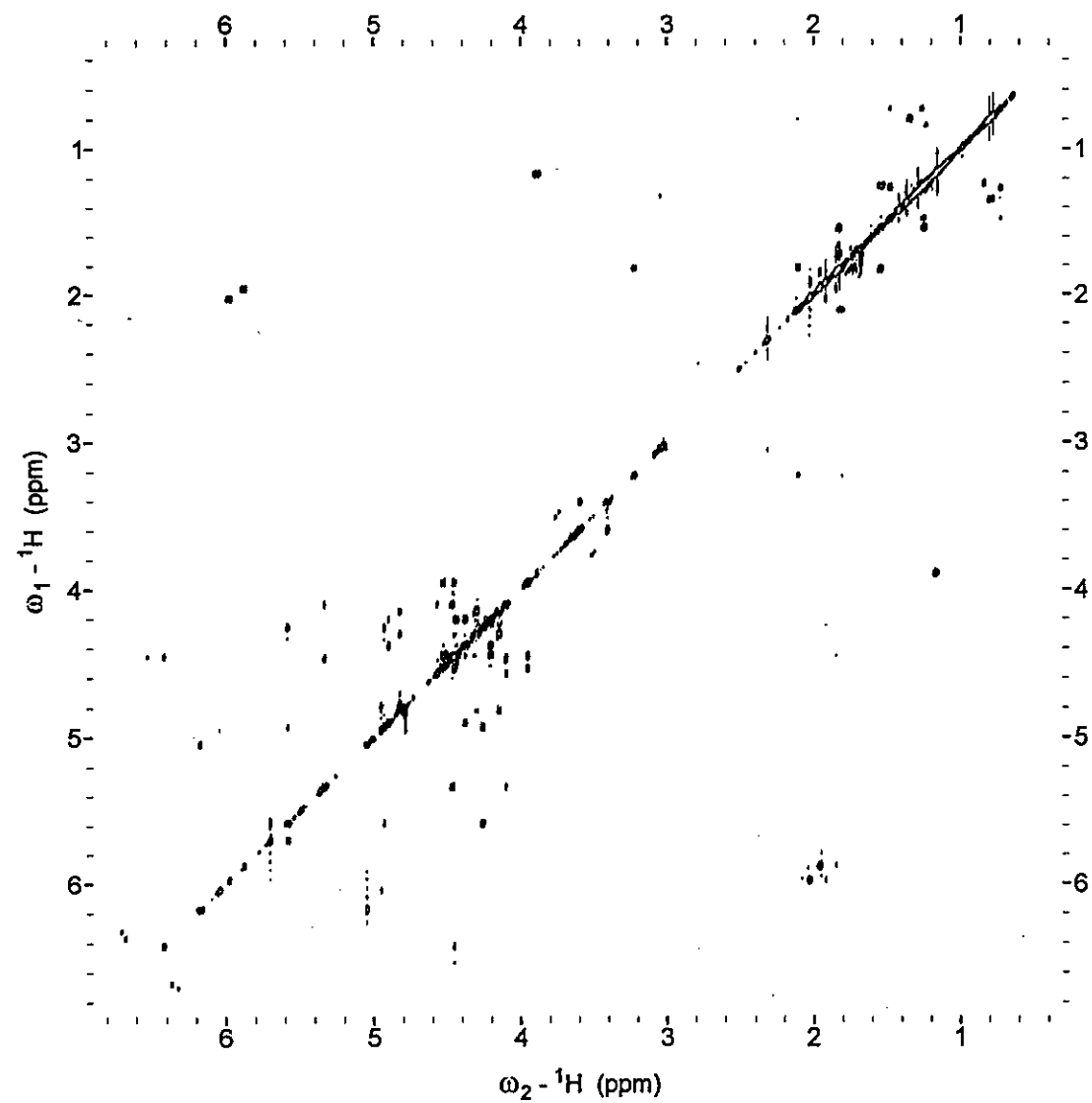
28/66
Figure 25
HMQC of Y1



29/66
Figure 26
HMBC of Y1

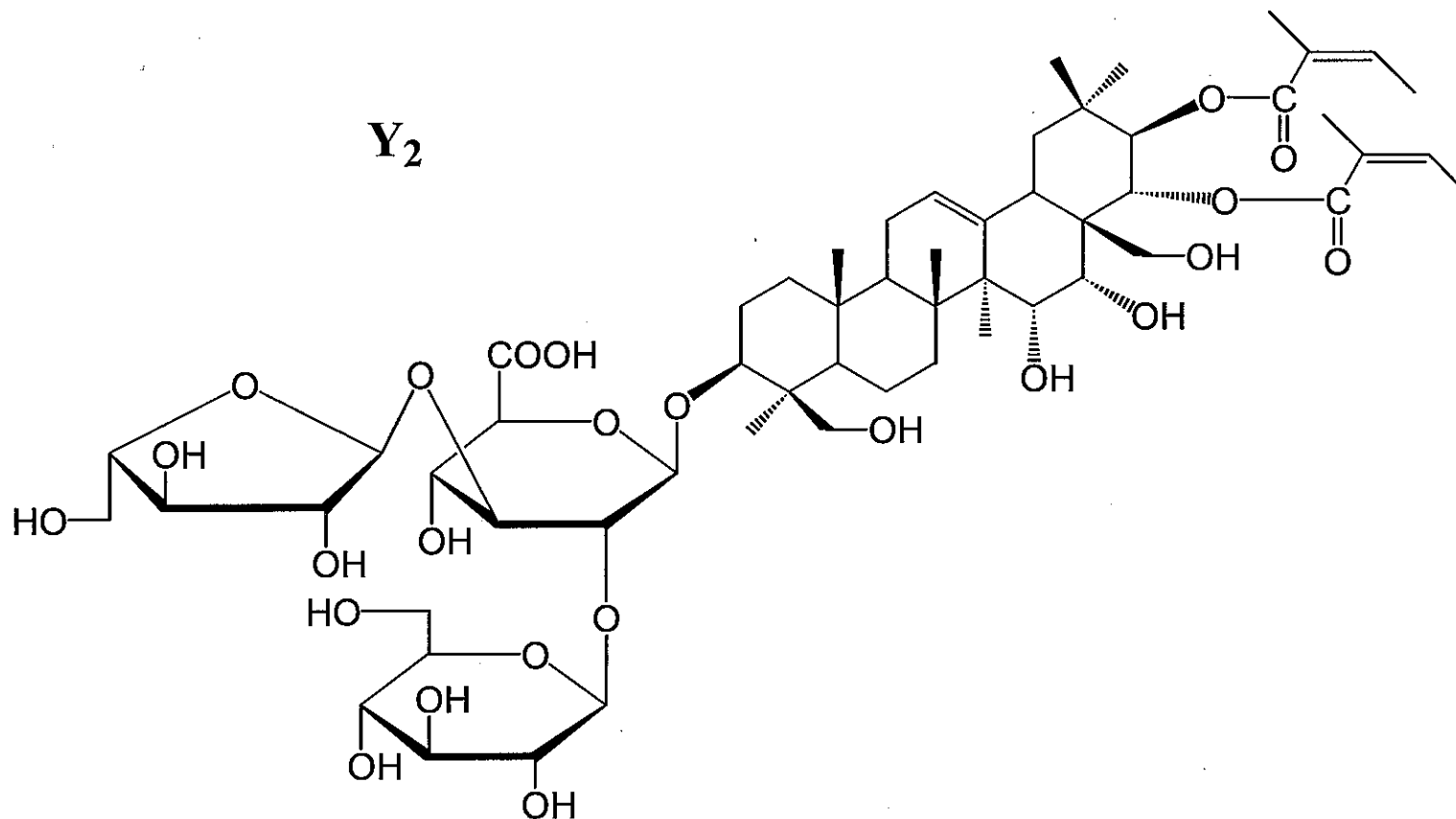


30/66
Figure 27
2D NMR (COSY) of Y1

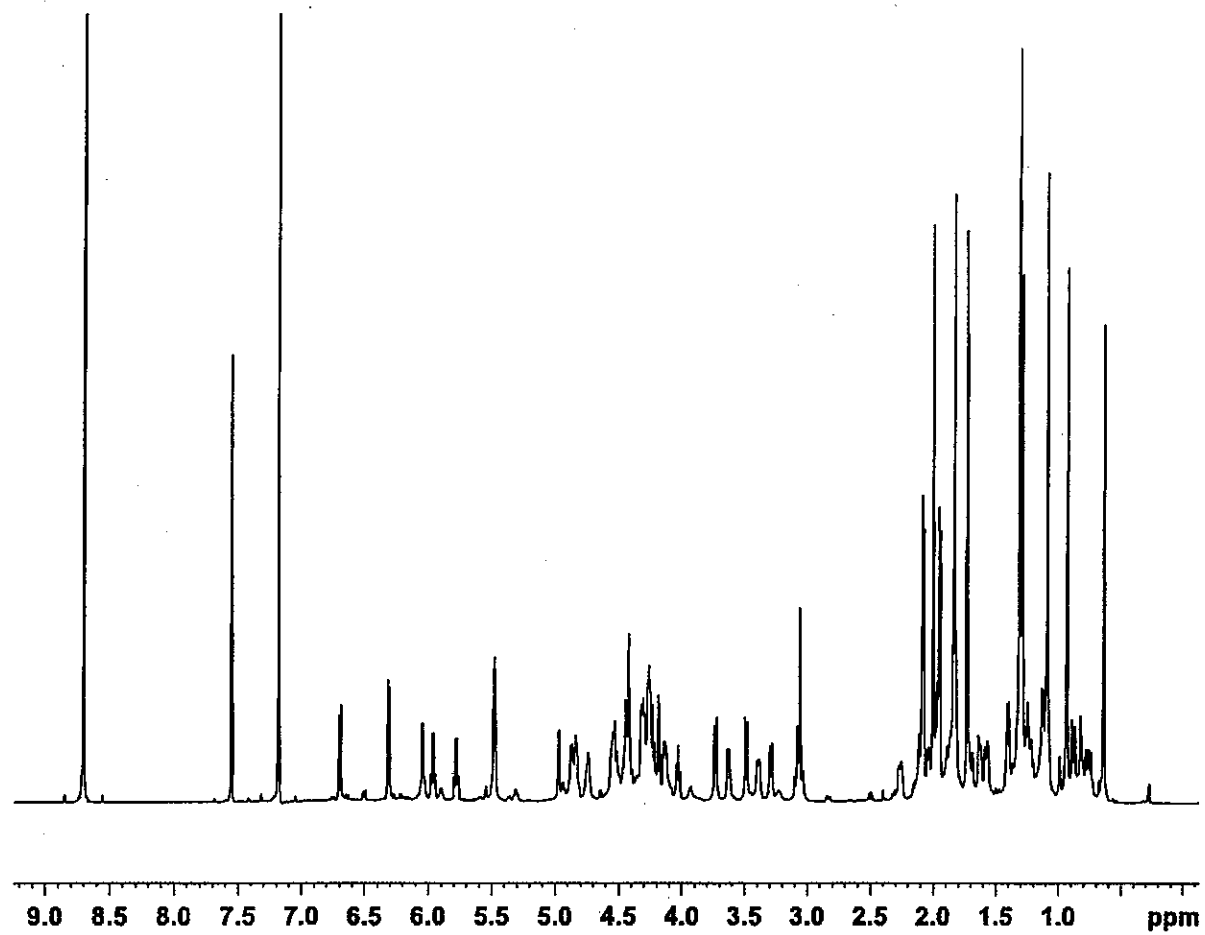


31/66

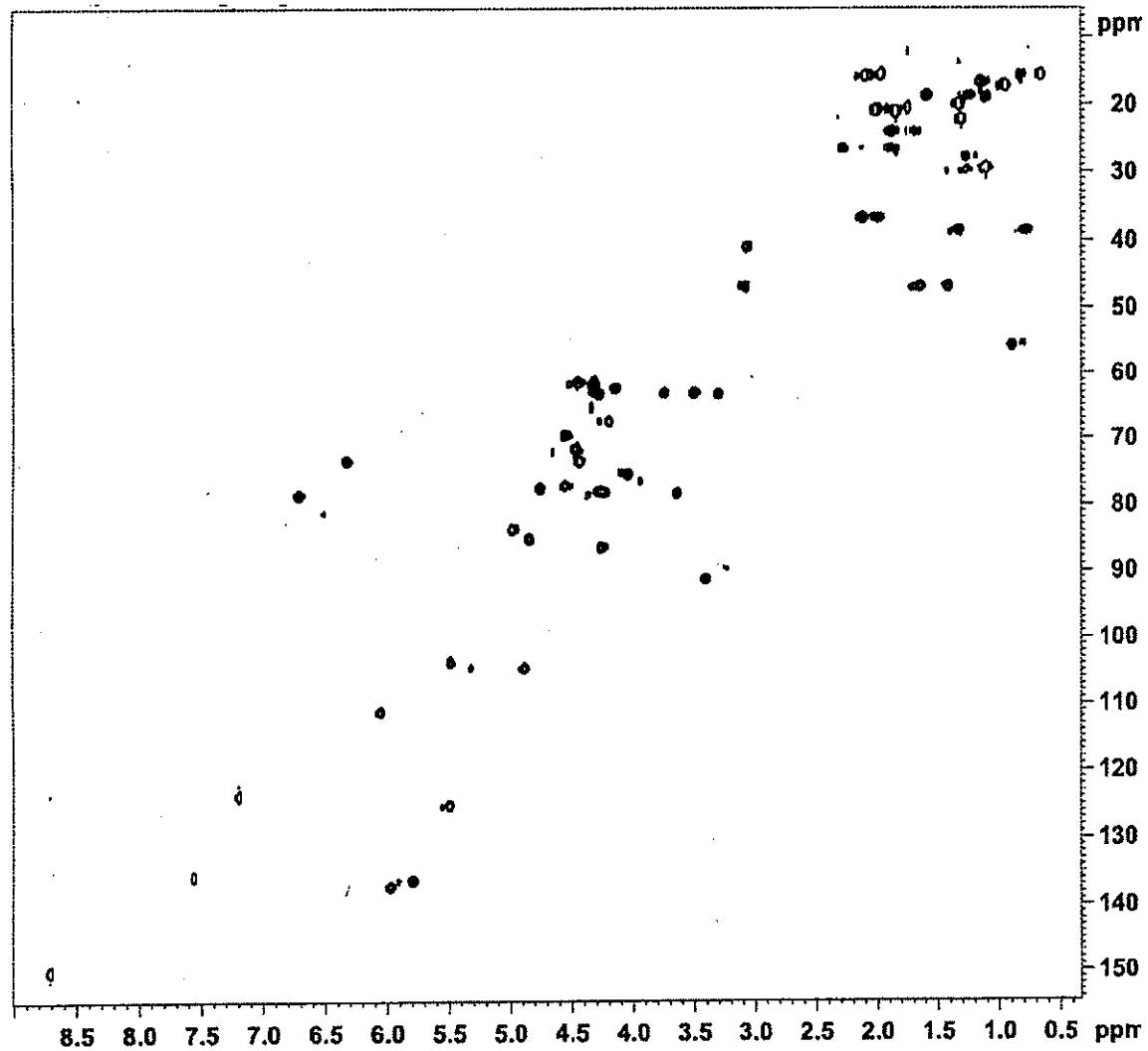
Figure 28. Chemical Structure of Y2



32/66
Figure 29
H-NMR Spectrum of Y2

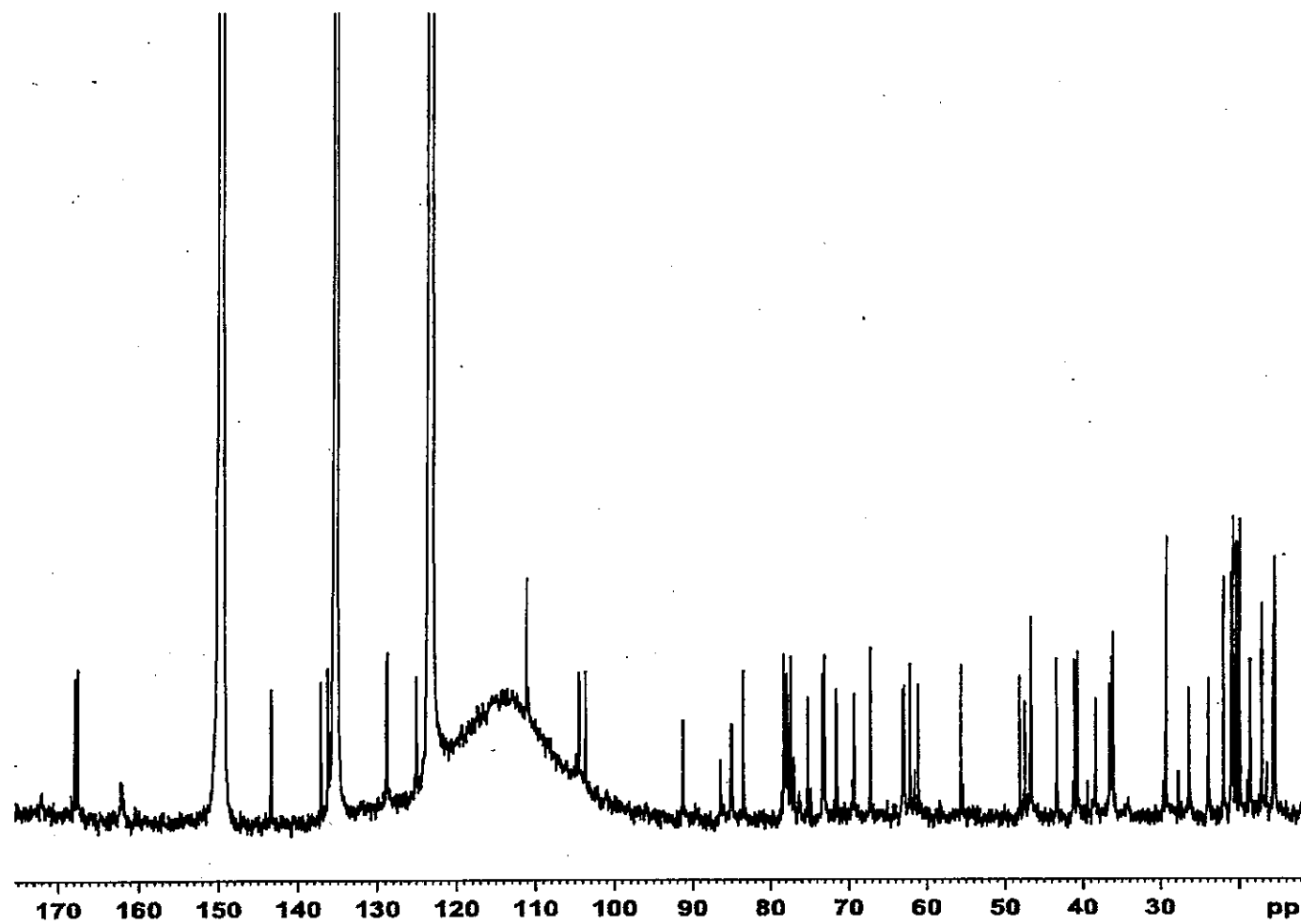


33/66
Figure 30
Y2 HMQC-level-1

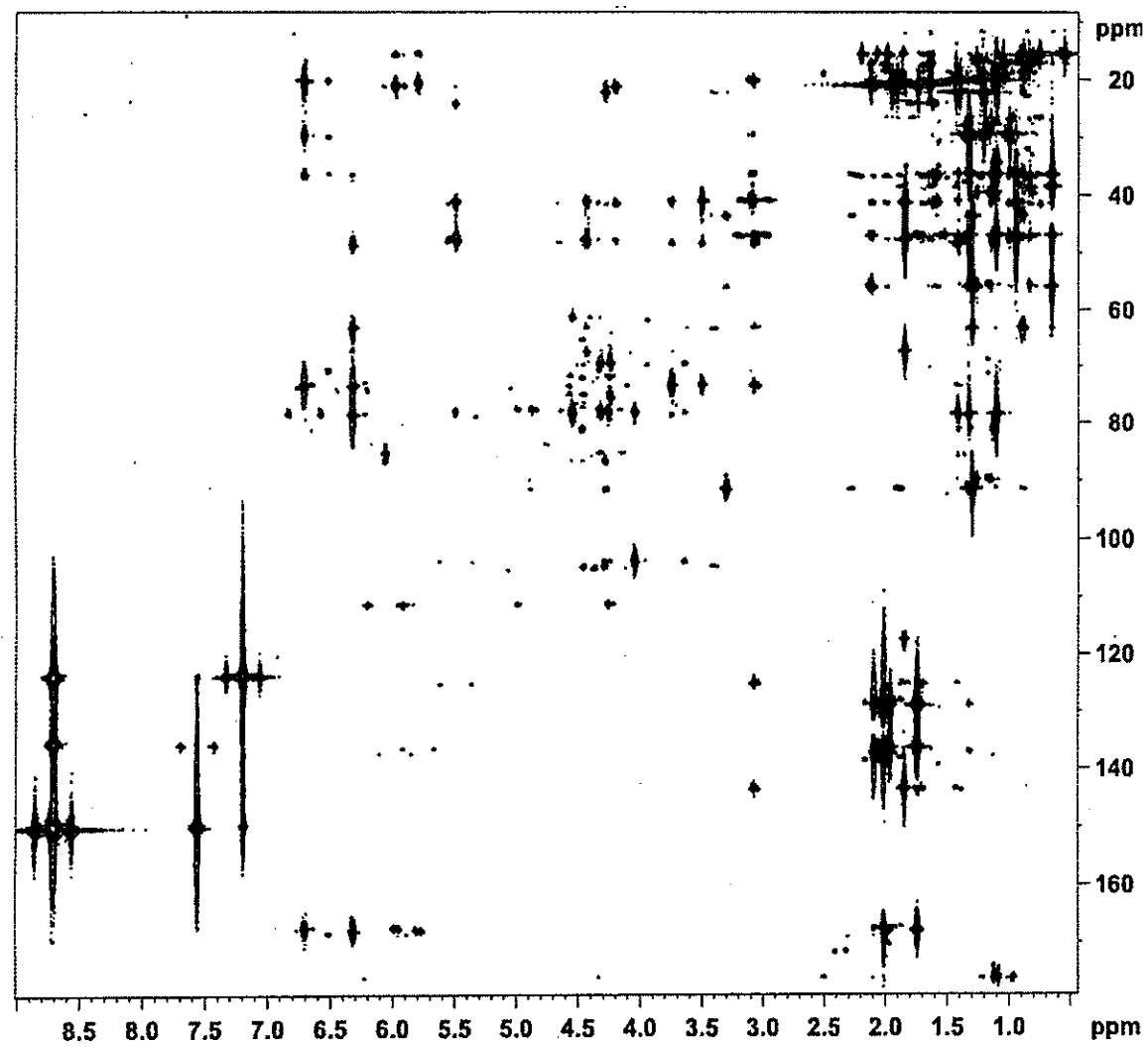


34/66
Figure 31

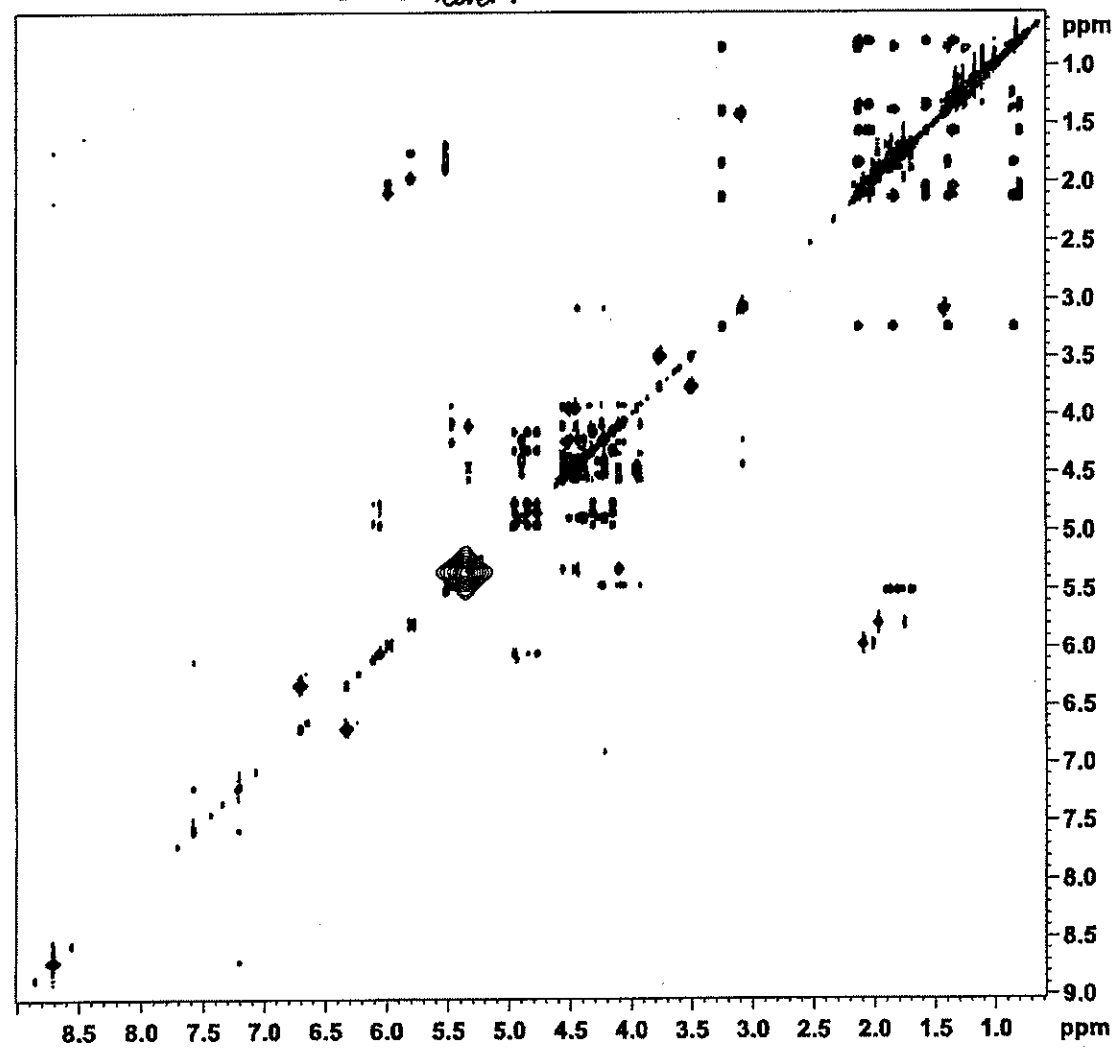
Y2 C13 H-NMR spectrum



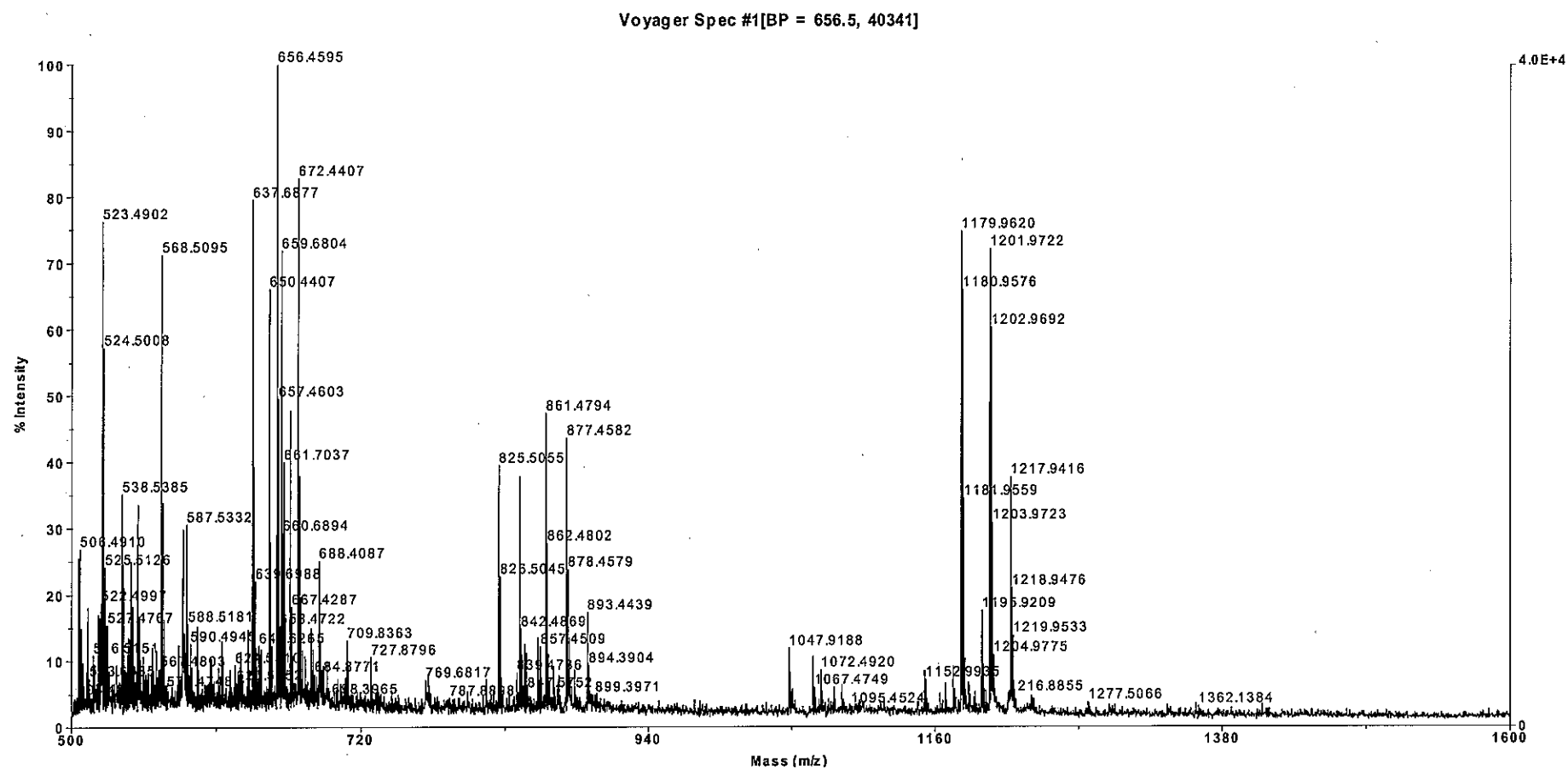
35/66
Figure 32
Y2-HMBC-level 1



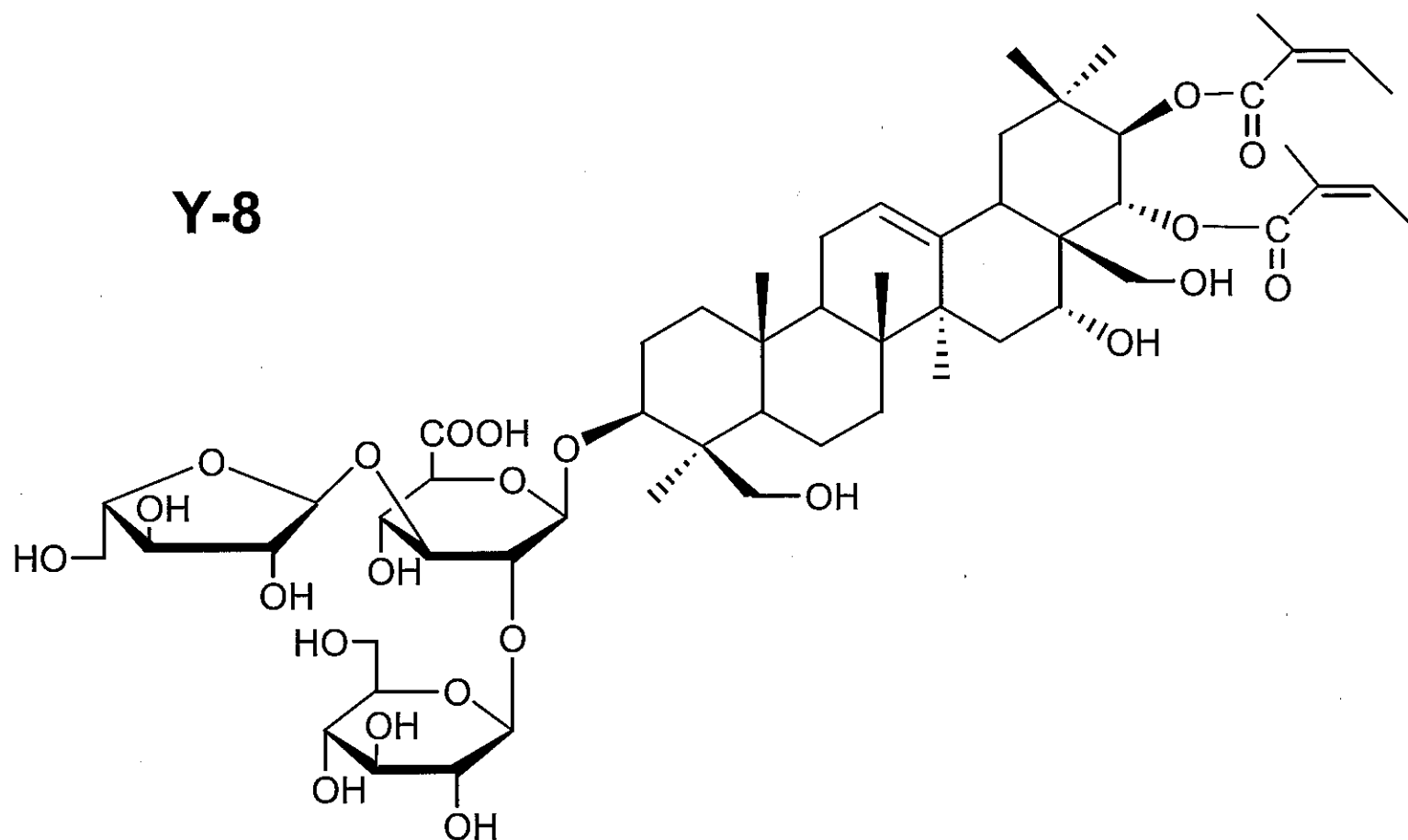
36/66
Figure 33
Y2-HOHAHA-level-1



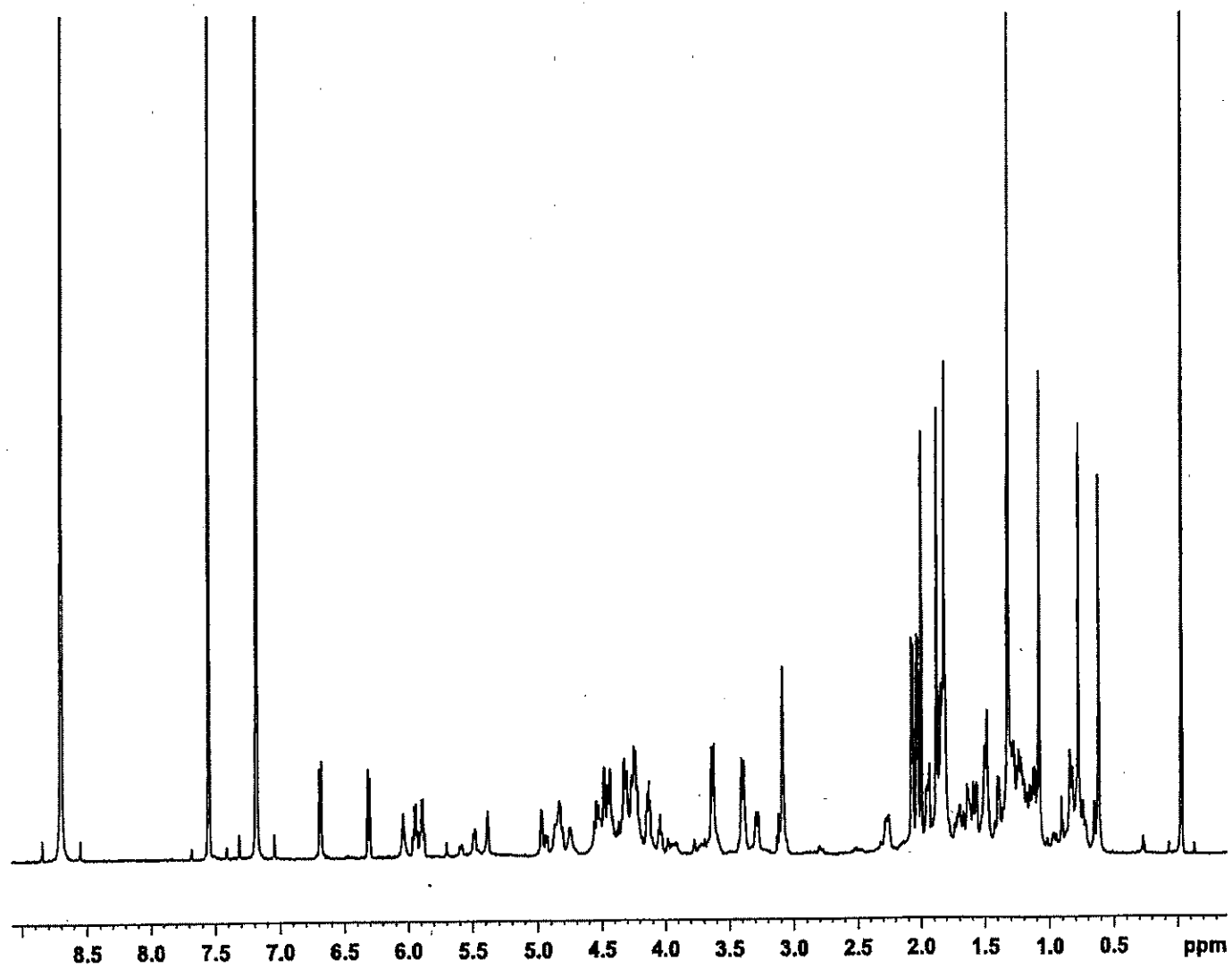
Mass spectrum of Y2 + Matrix + Standards



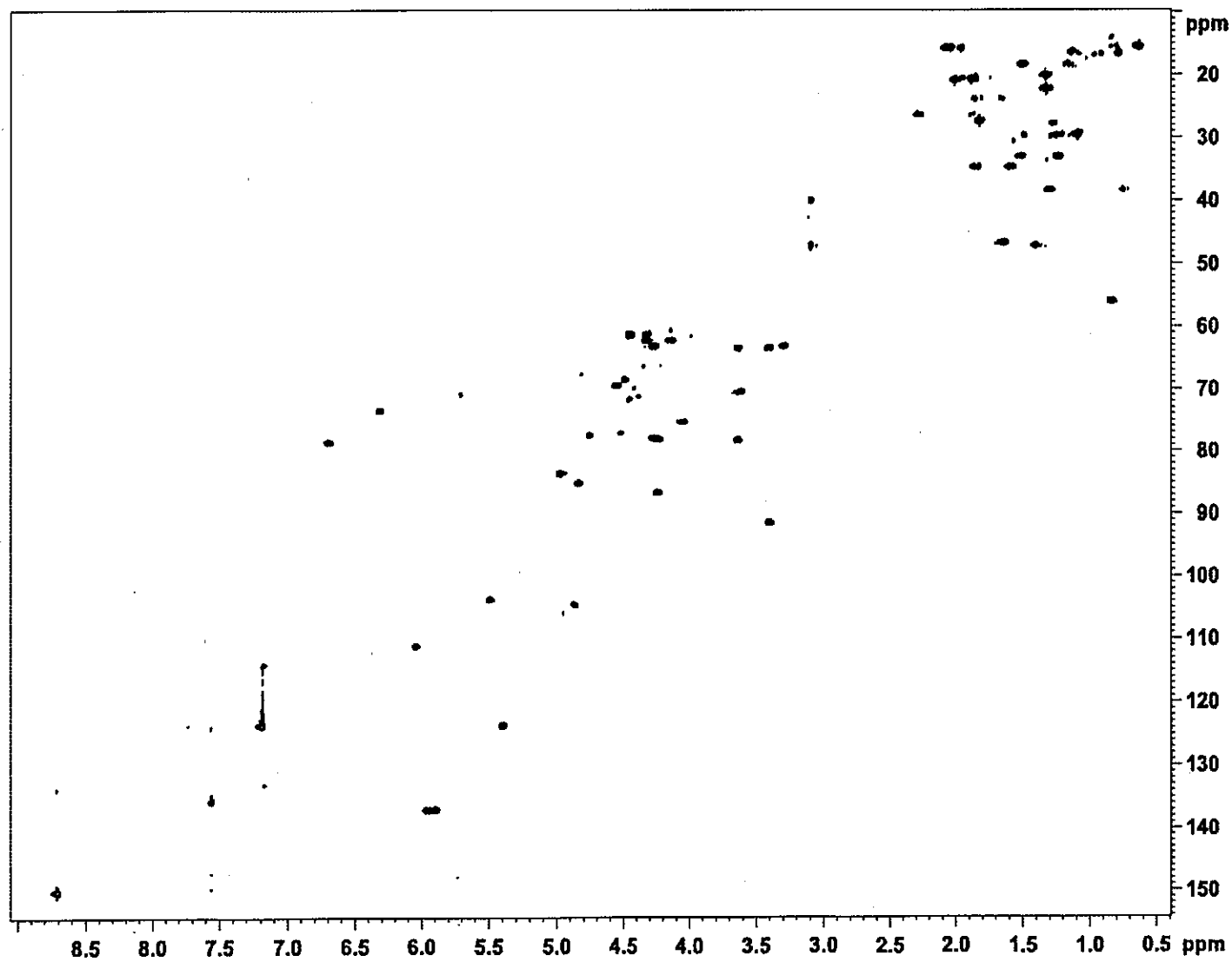
38/66
Figure 35
Structure of Y8



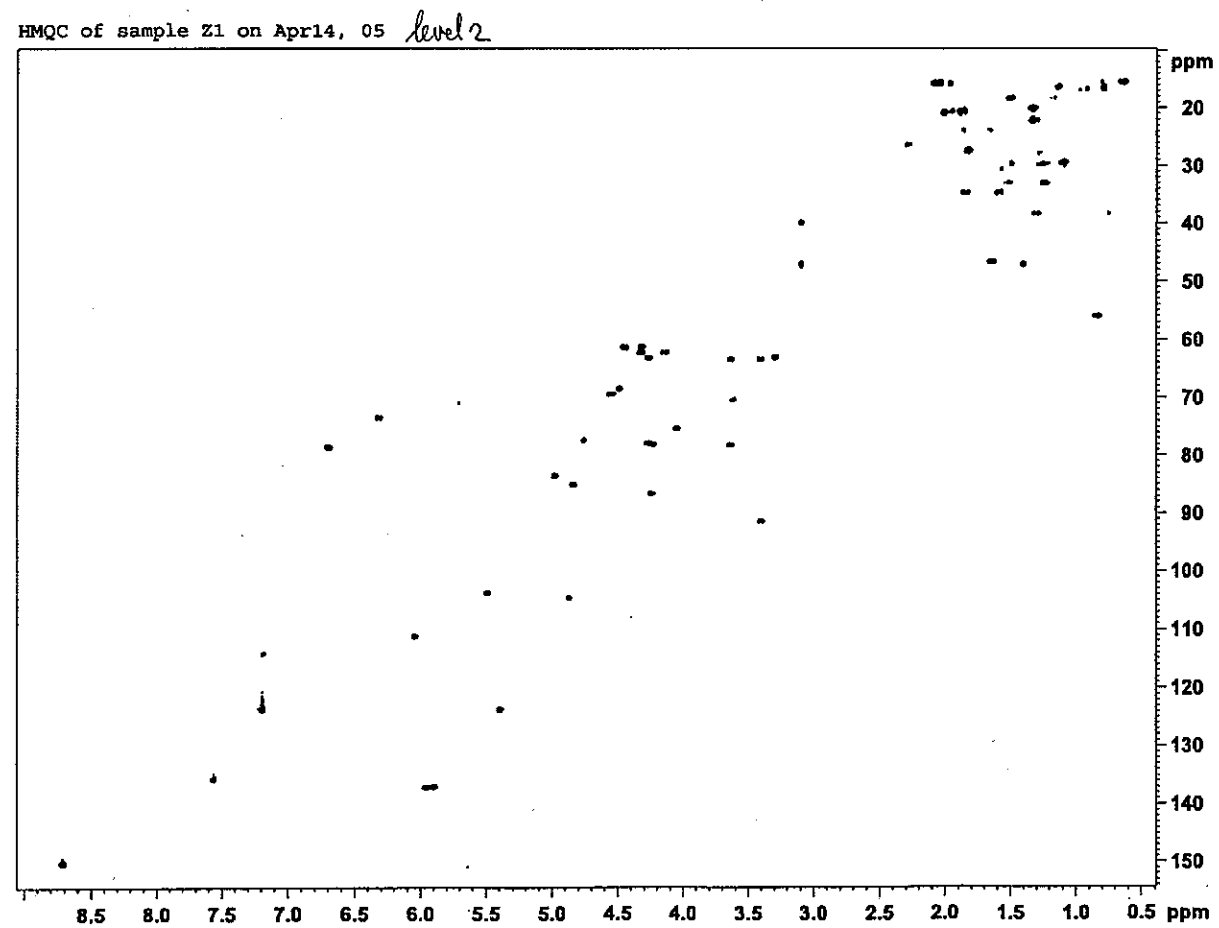
39/66
Figure 36
Y8-H-NMR-full



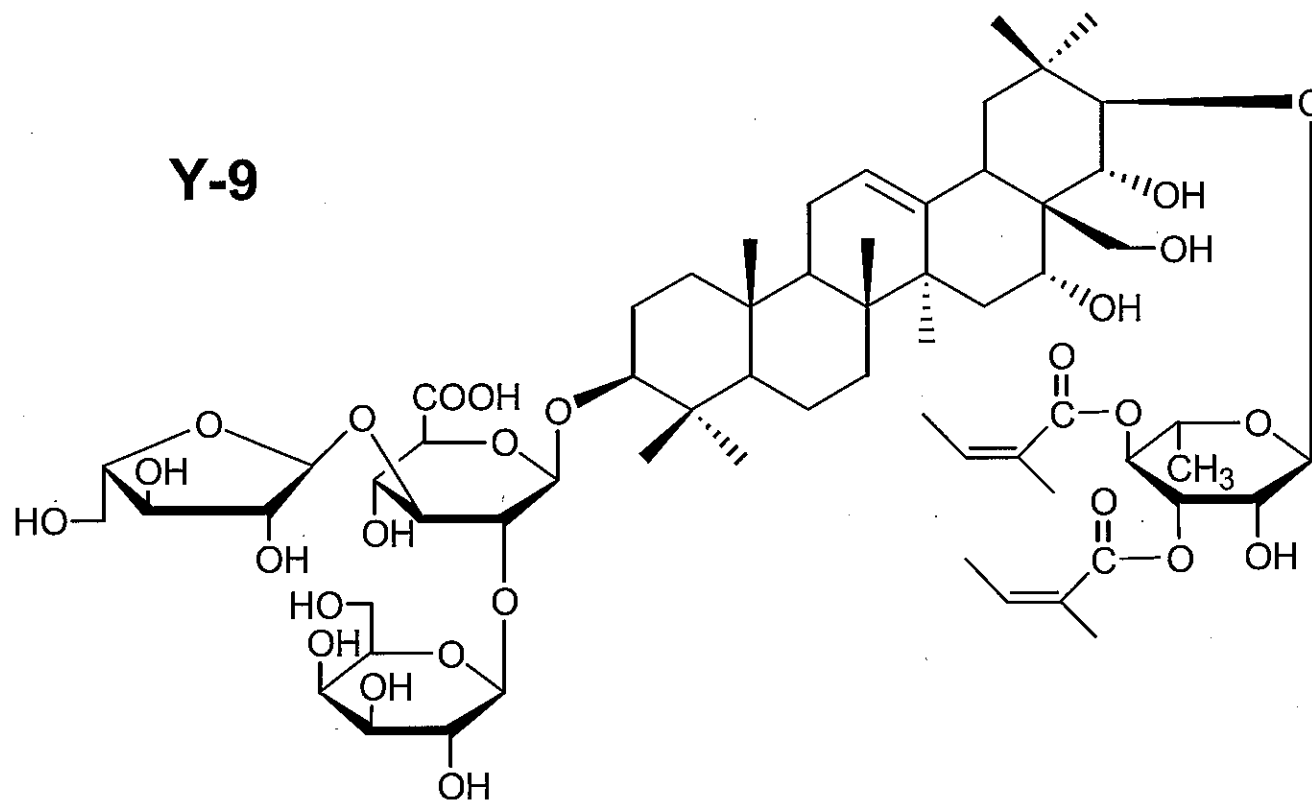
40/66
Figure 37
Y8-HMQC-level-1



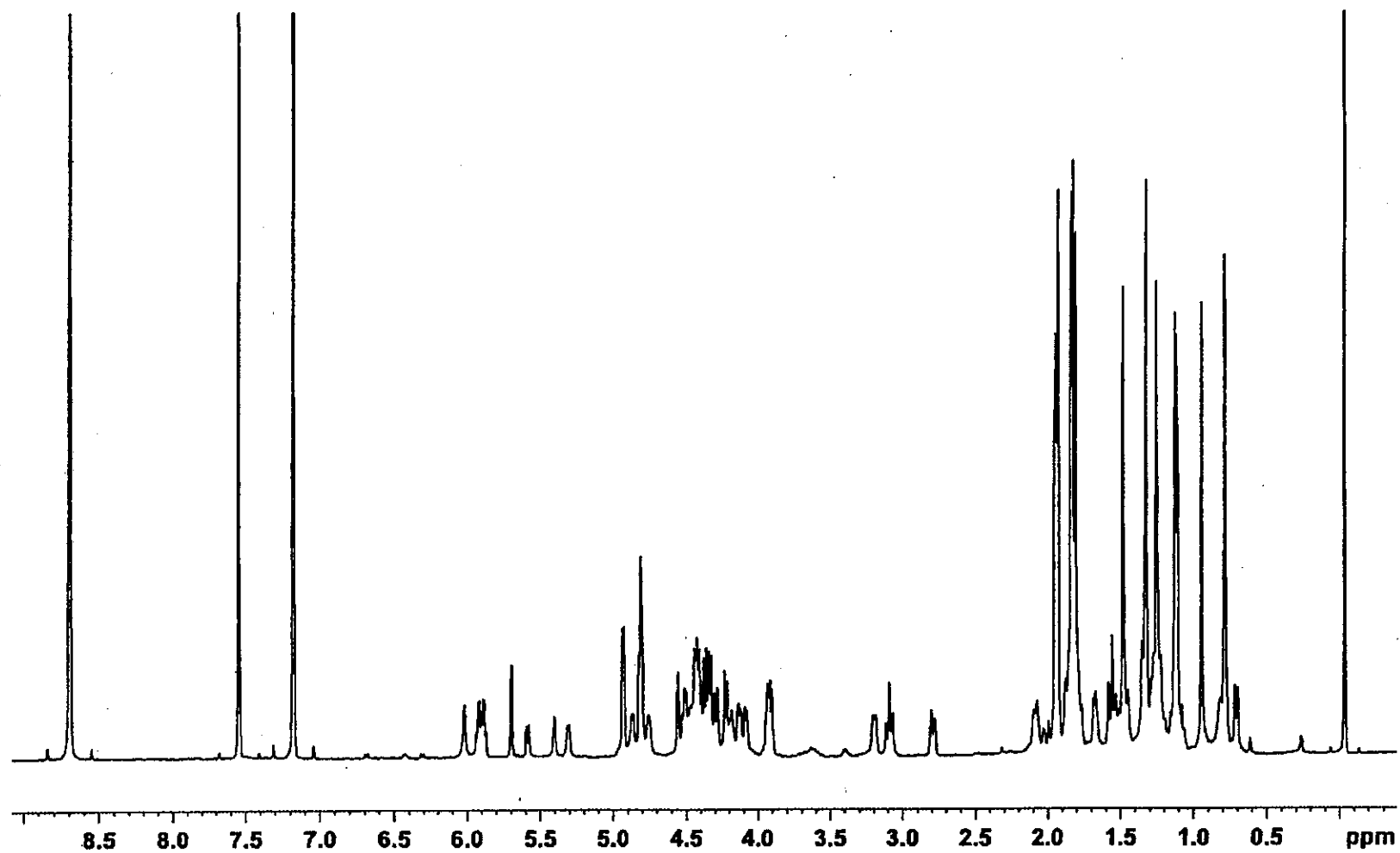
41/66
Figure 38
Y8-C13 NMR (or HMQC-level 2)



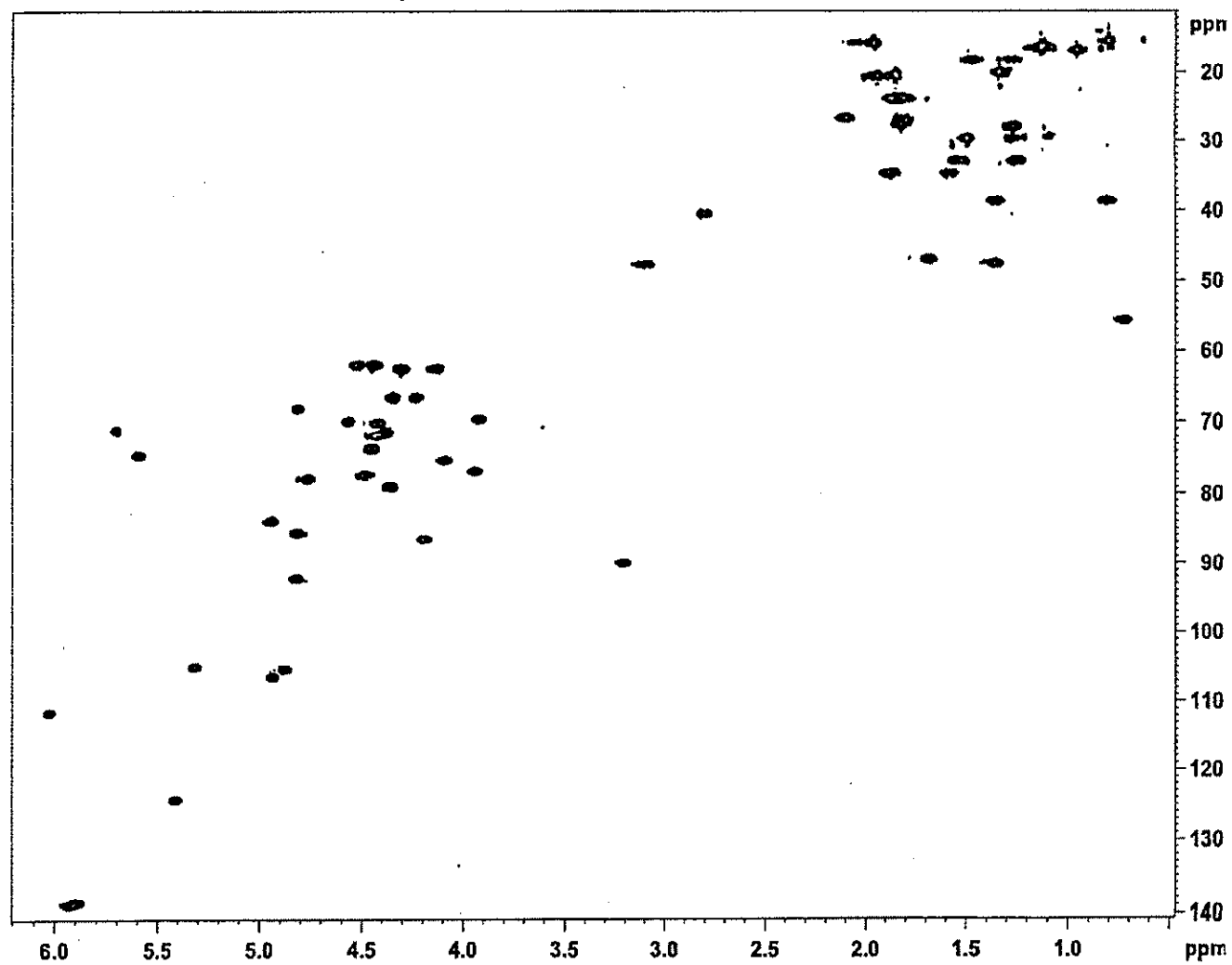
42/66
Figure 39
Structure of Y9



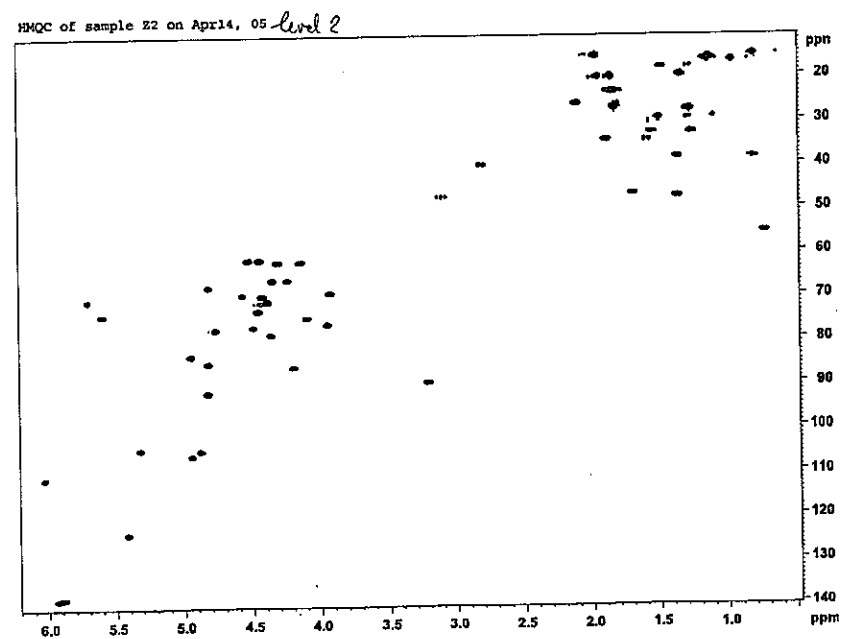
43/66
Figure 40
Y9-H-NMR



44/66
Figure 41
Y9-HMQC-level-1



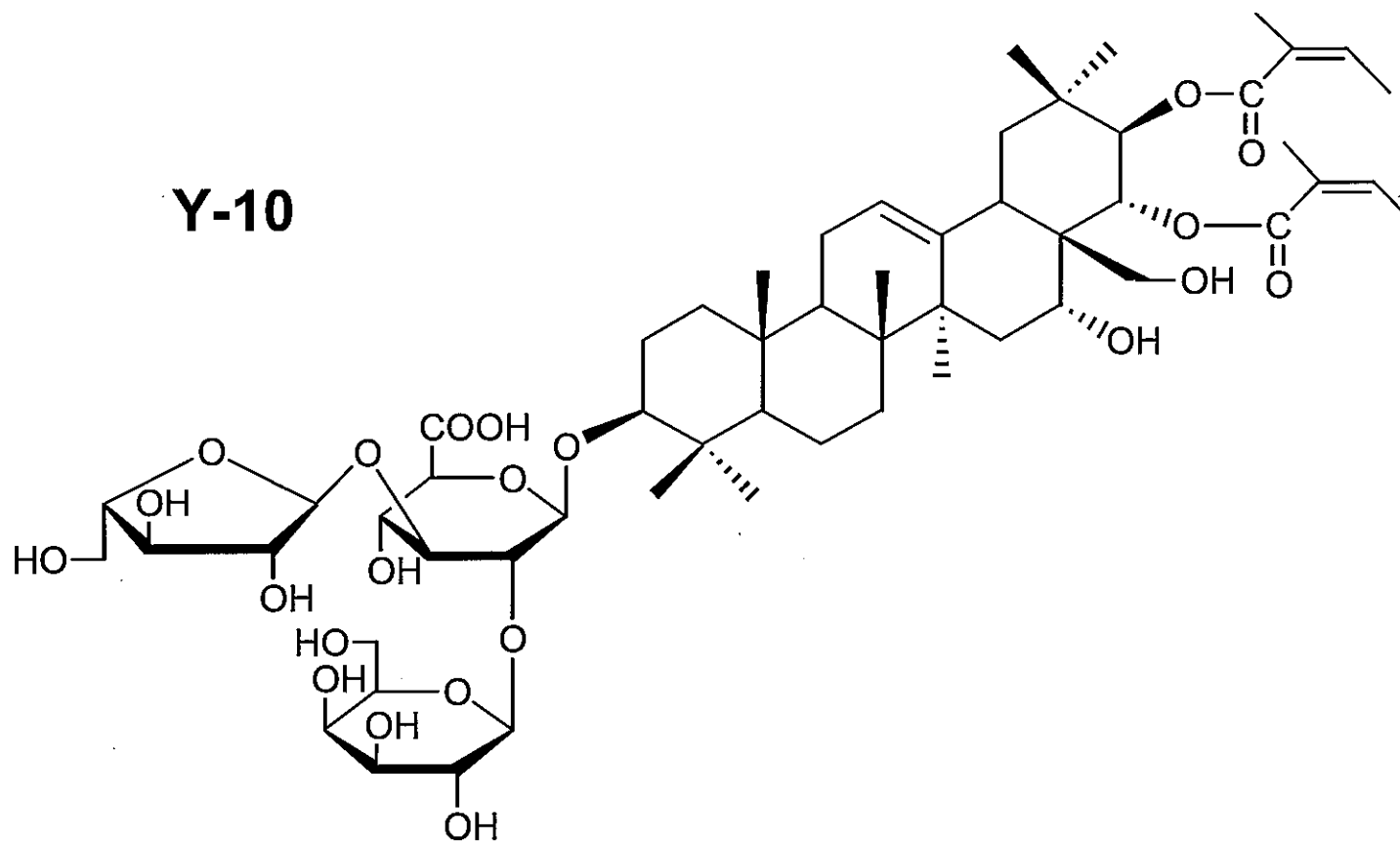
45/66
Figure 42
Y9 2D NMR (HMQC) level 2



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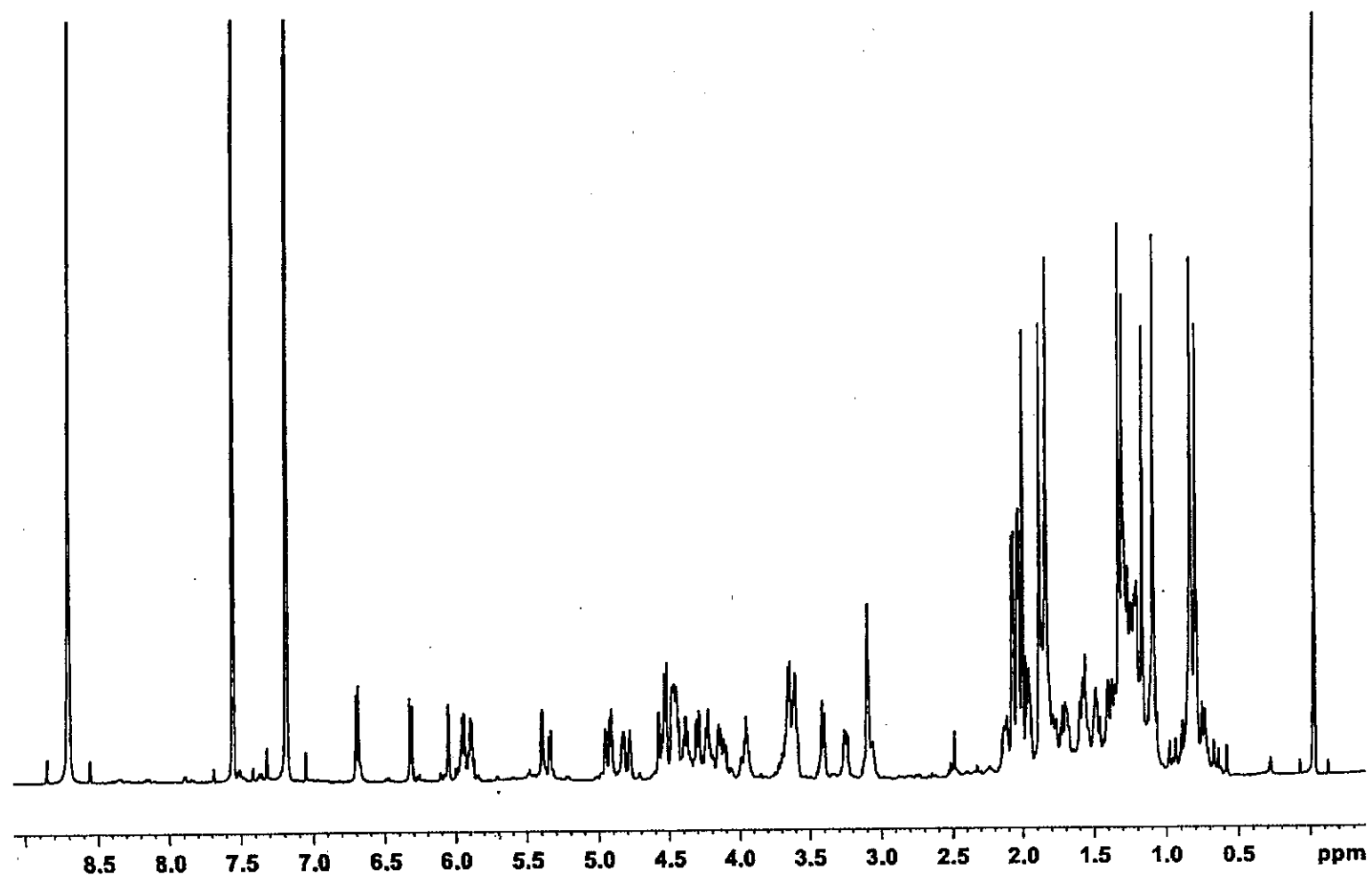
Figure 43

Structure of Y10

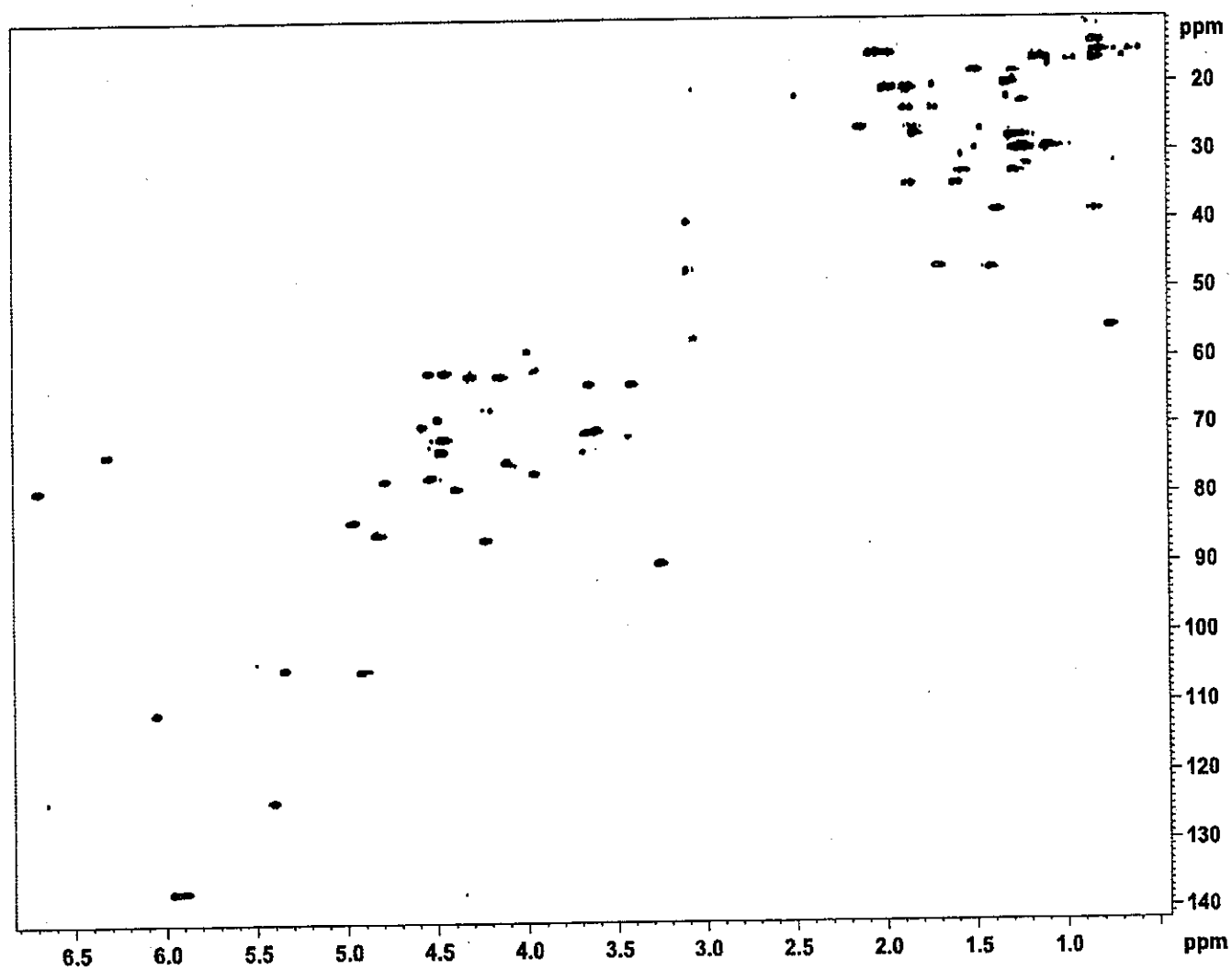


Y-10

47/66
Figure 44
Y10-H-NMR

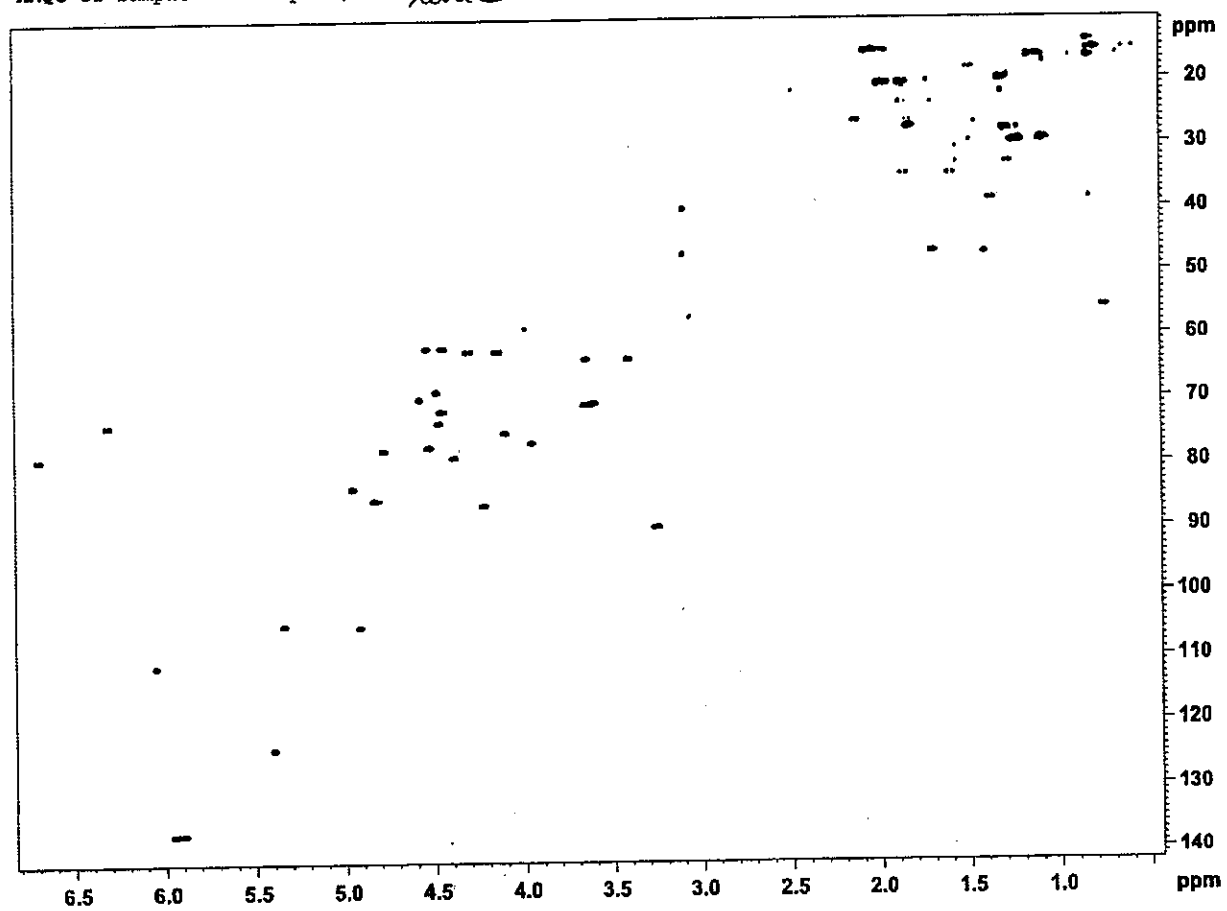


48/66
Figure 45
Y10-HMQC-level-1

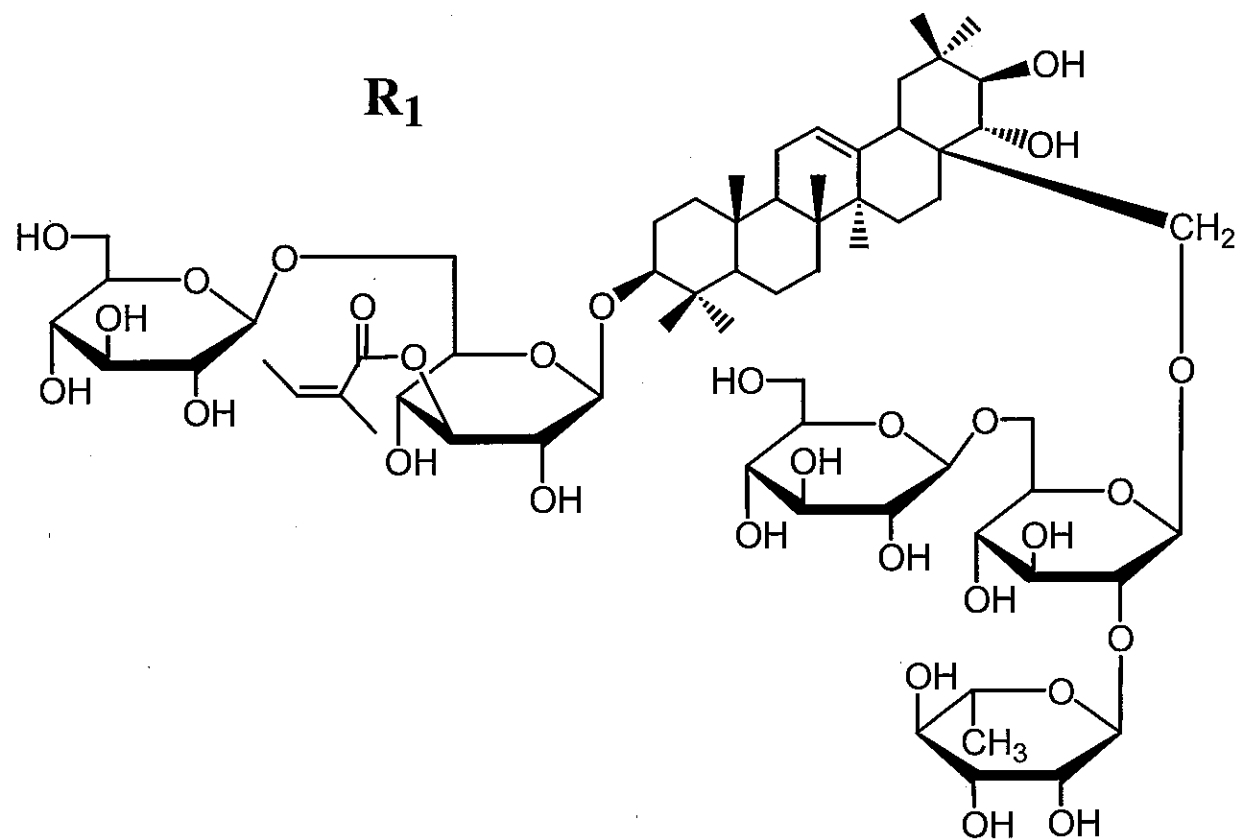


49/66
Figure 46
Y10-HMQC-level-2

HMQC of sample Z3 on Apr14, 05 *level 2*

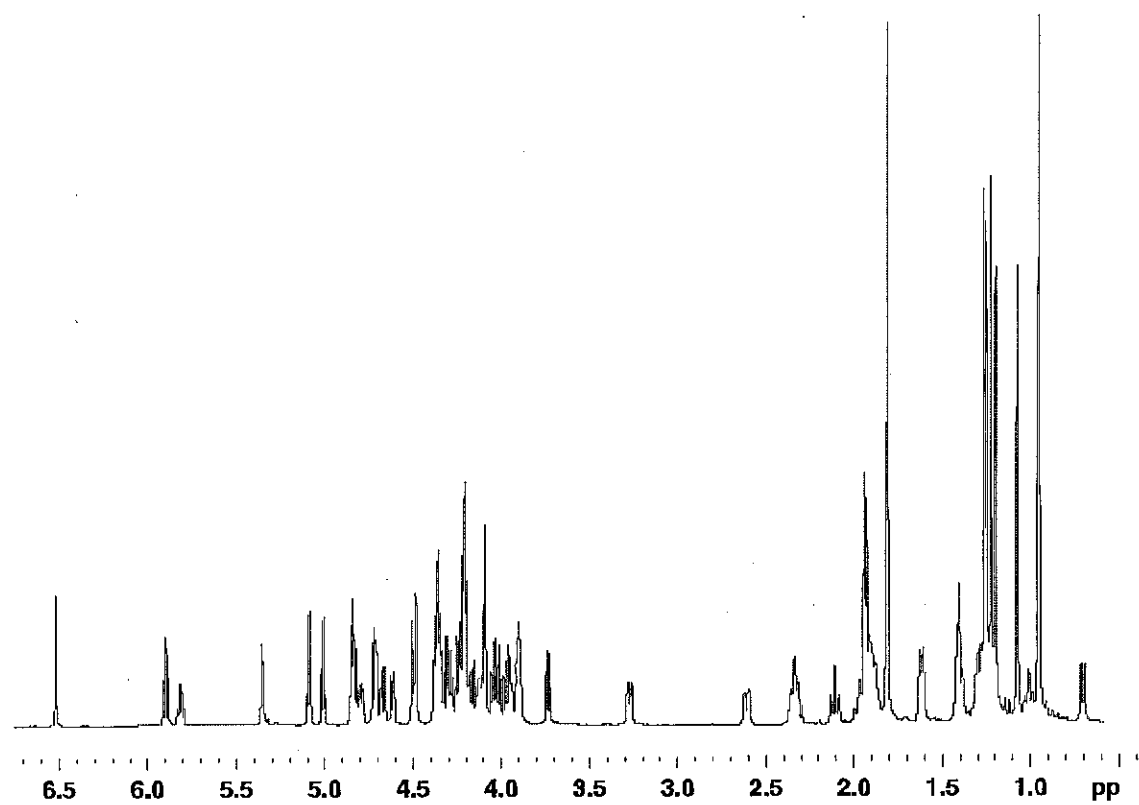


50/66
Figure 47
R1-Structure

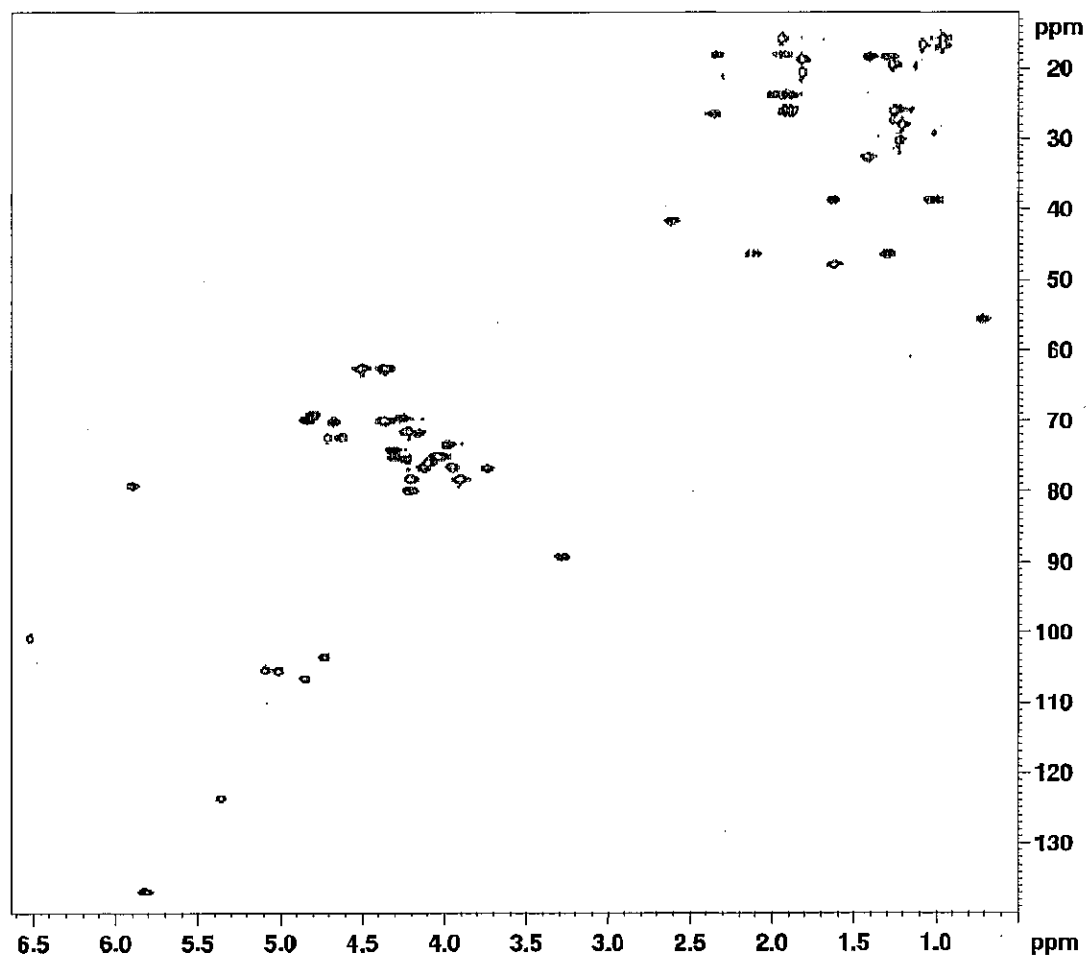


R₁: 3-O-[angeloyl-(1→3)- β -D-glucopyranosyl-(1→6)]- β -D-glucopyranosyl-28-O-[α -L-rhamnopyranosyl-(1→2)- β -D-glucopyranosyl-(1→6)- β -D-glucopyranosyl-3 β , 21 β , 22 α , 28-tetrahydroxyolean-12-ene

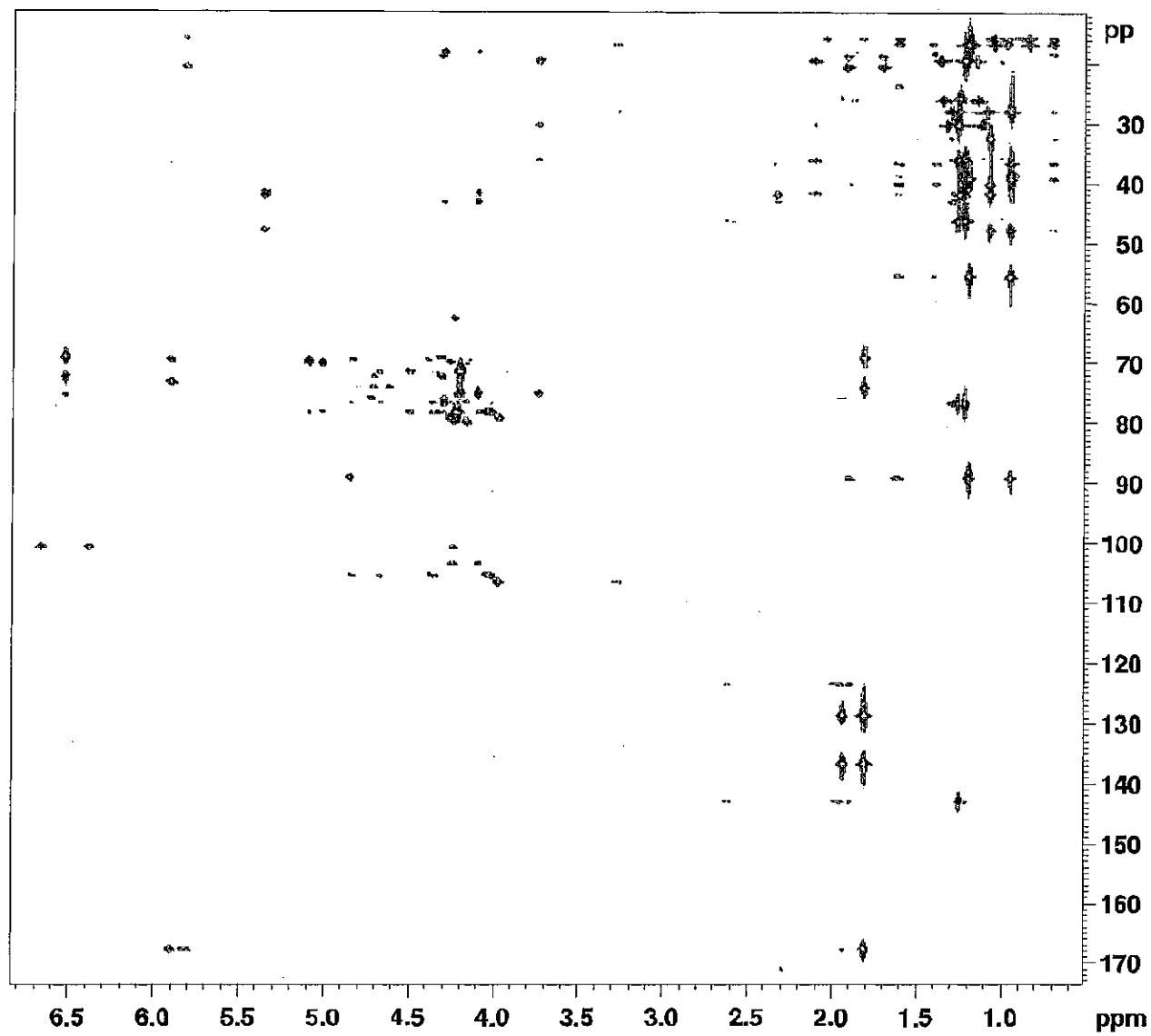
51/66
Figure 48
R1-H-NMR



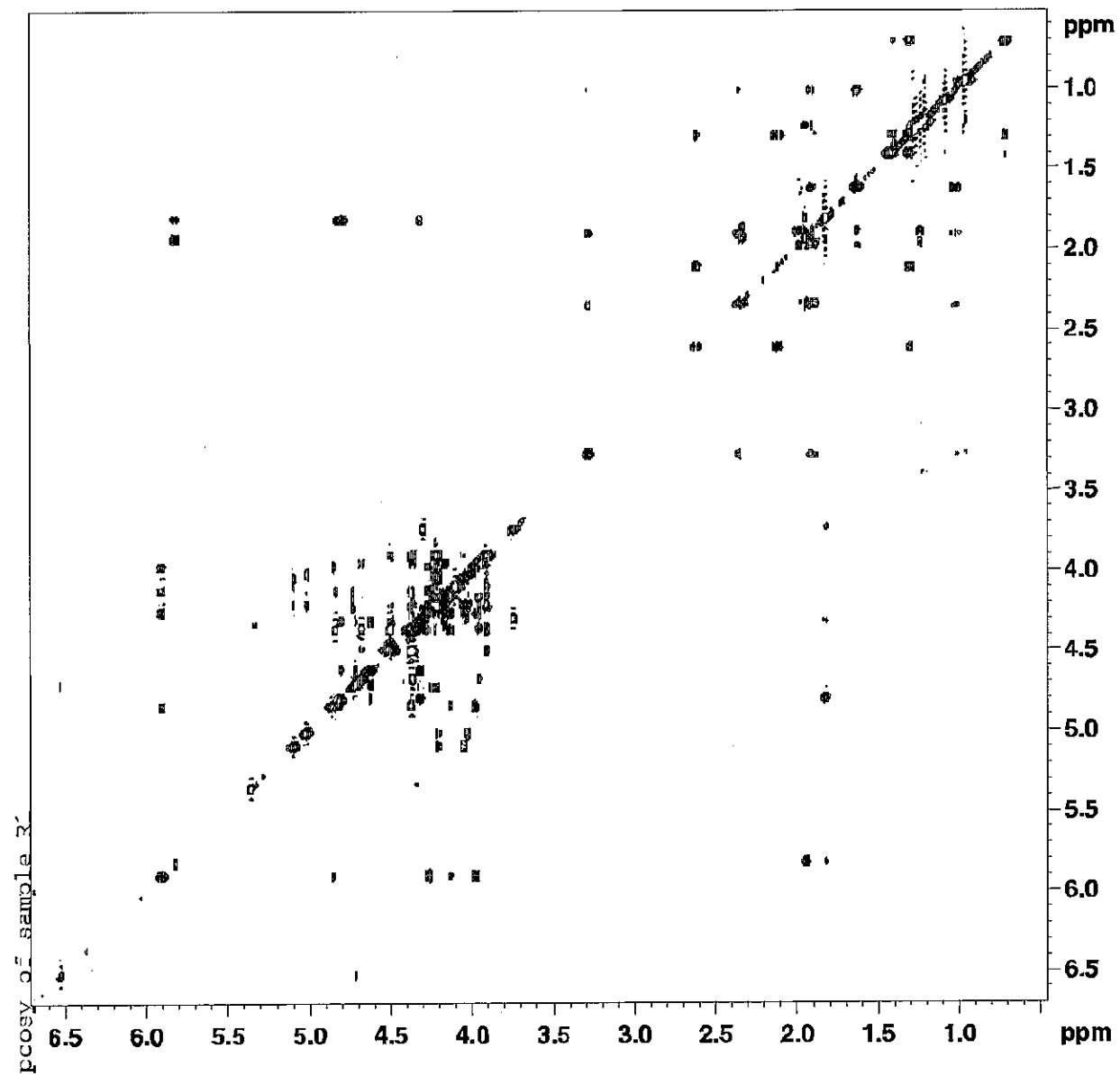
52/66
Figure 49
R1-HMQC



53/66
Figure 50
R1-HMBC-level 1

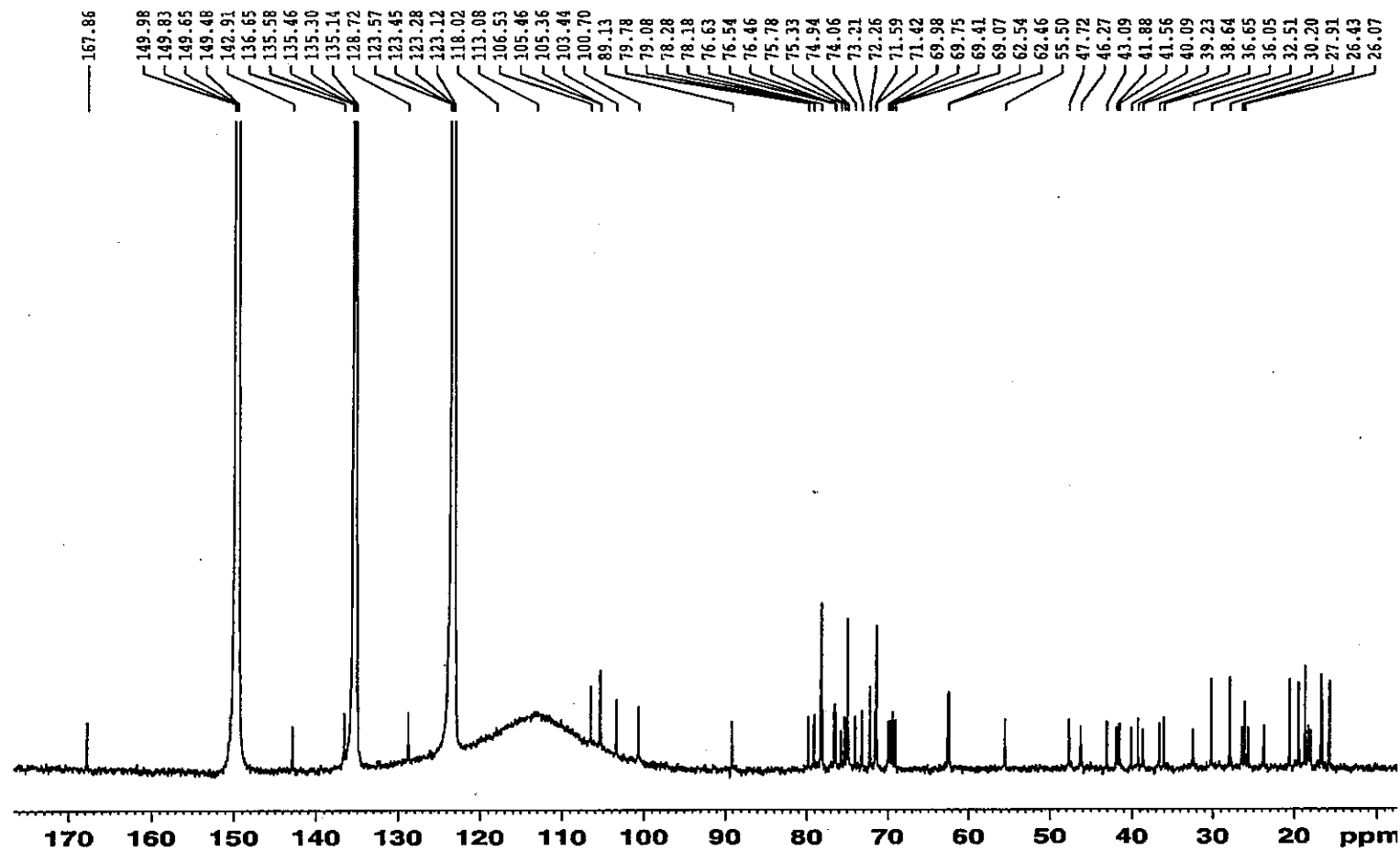


54/66
Figure 51
R1-COSY

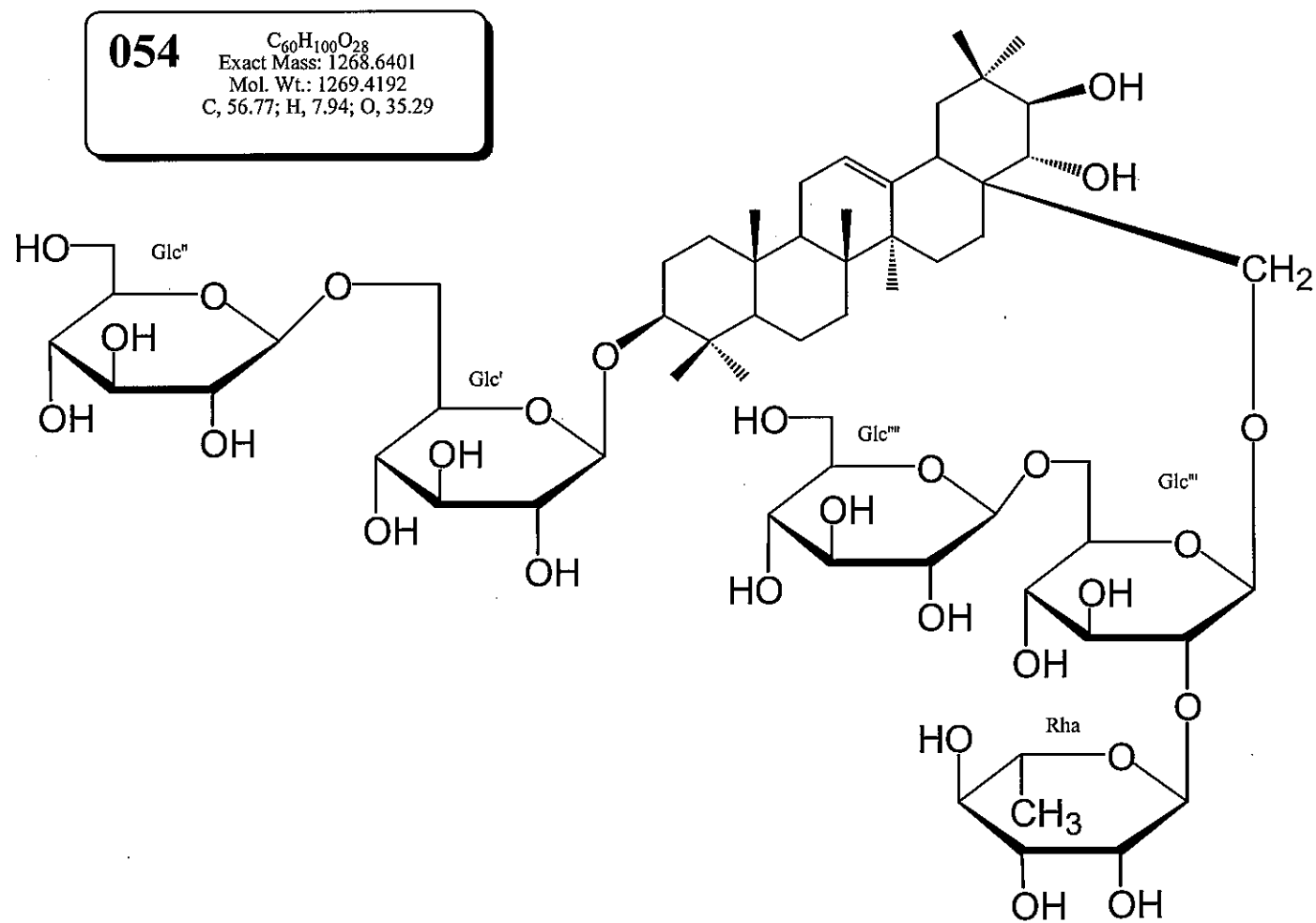


55/66
Figure 52
R1-C13-1

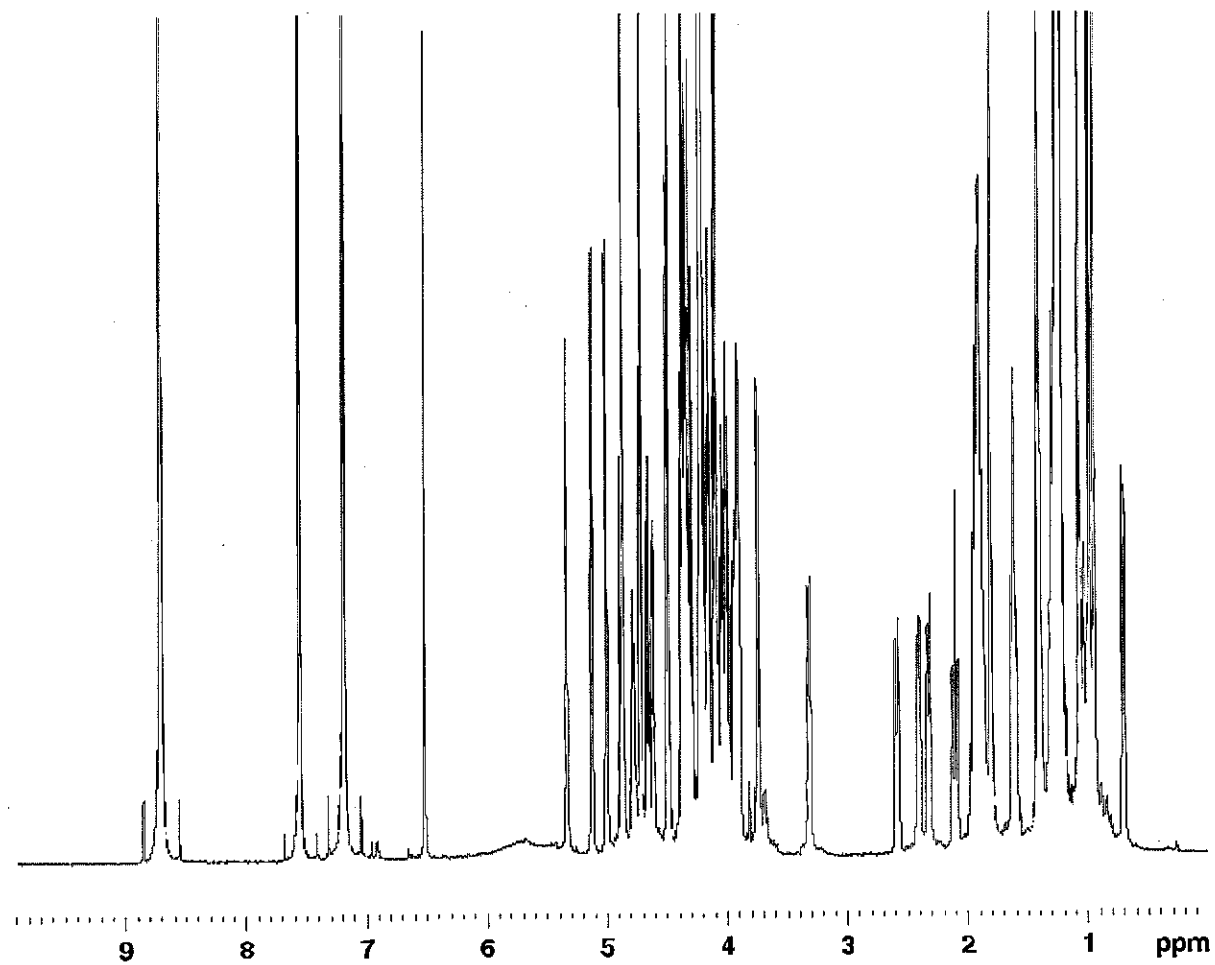
^{13}C spectrum of sample R1



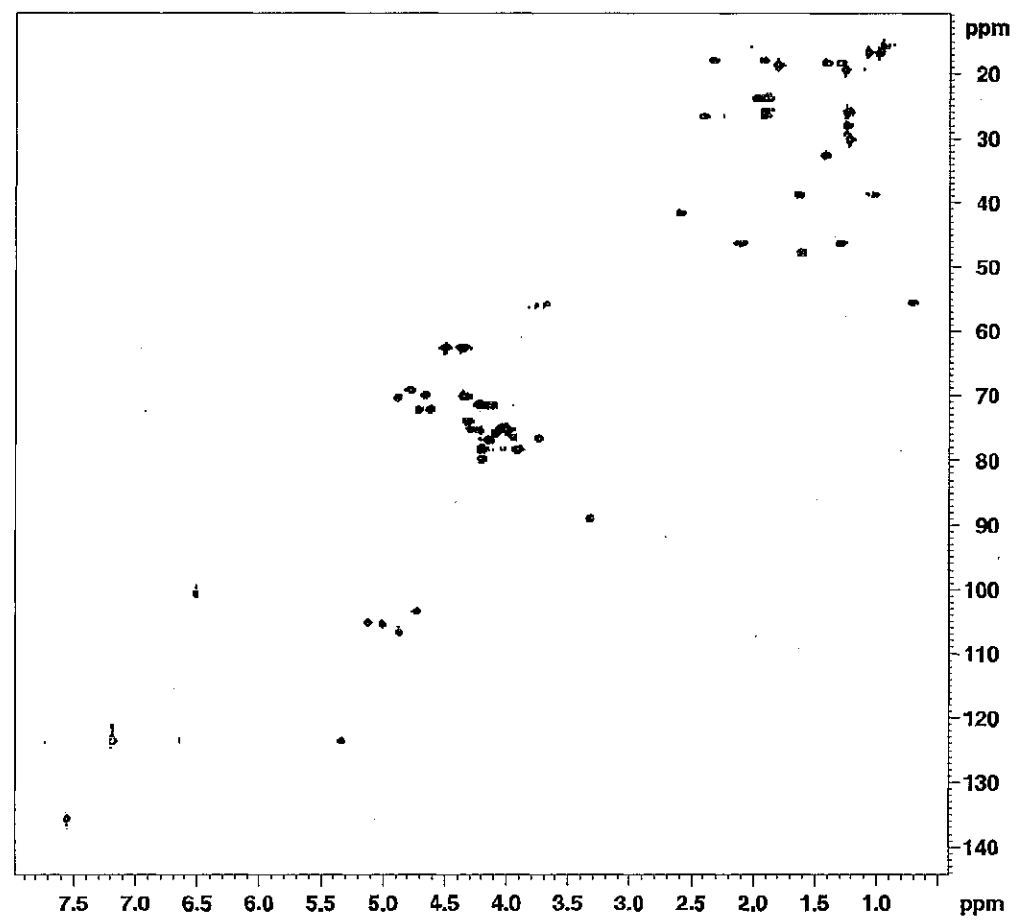
56/66
Figure 53
Structure of Compound O54



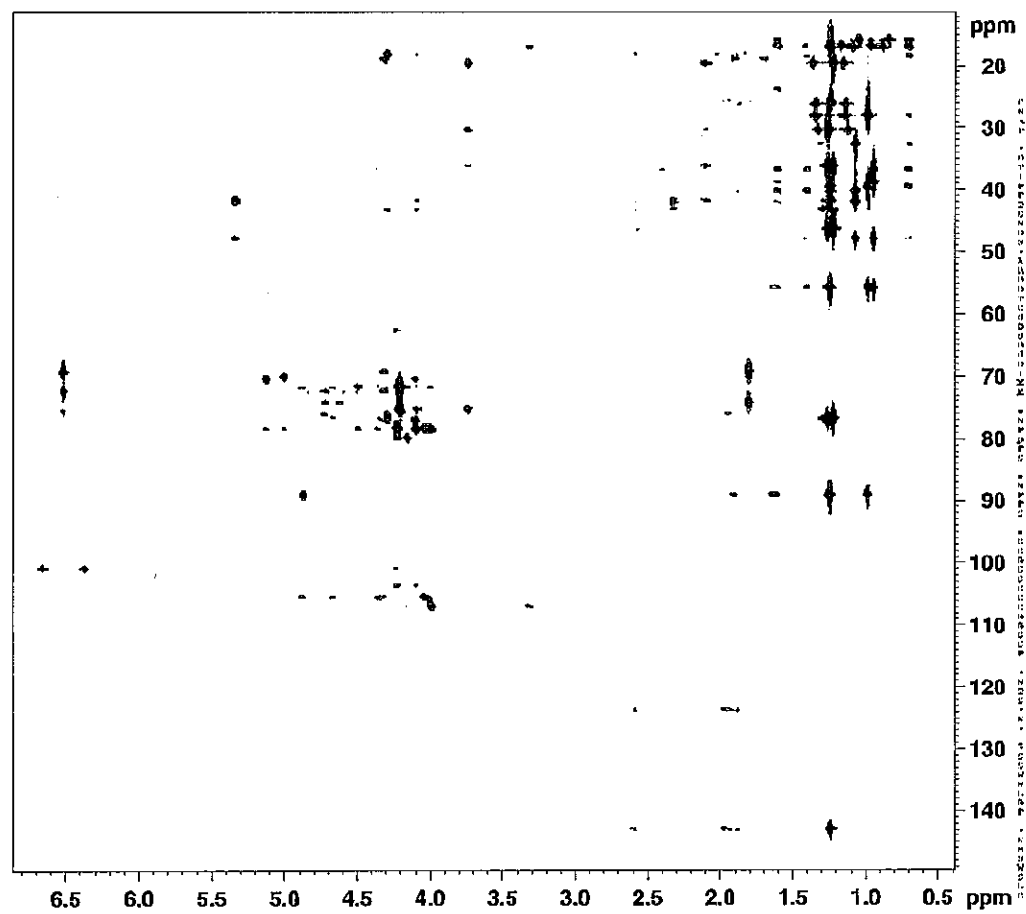
57/66
Figure 54
O54-H-NMR



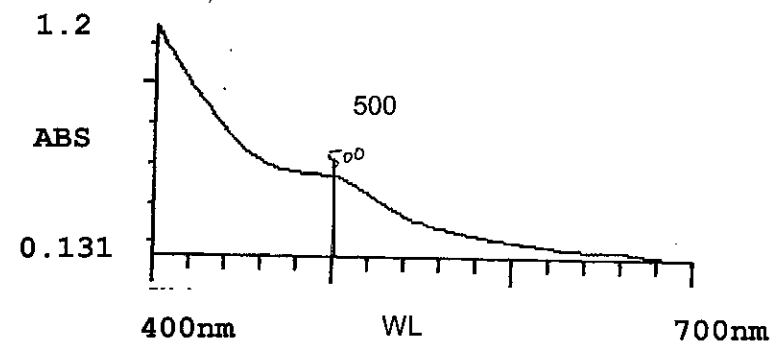
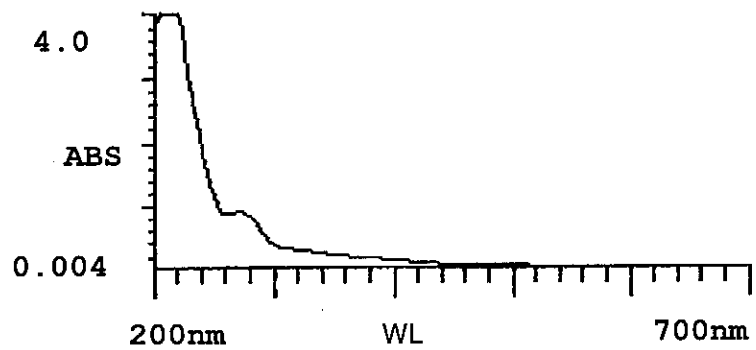
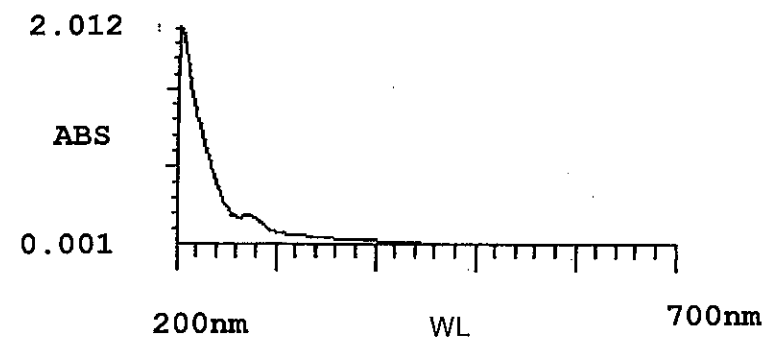
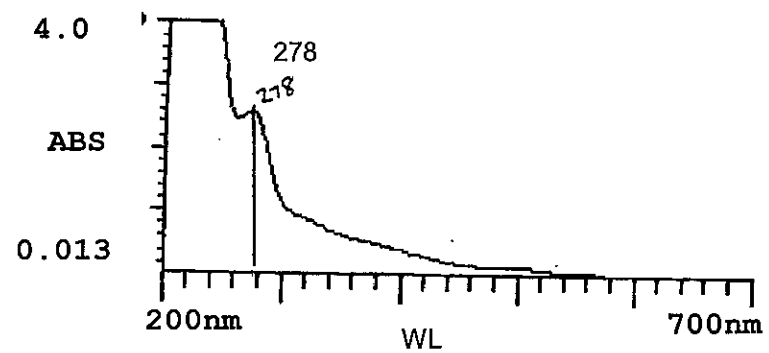
58/66
Figure 55
O54-HMQC



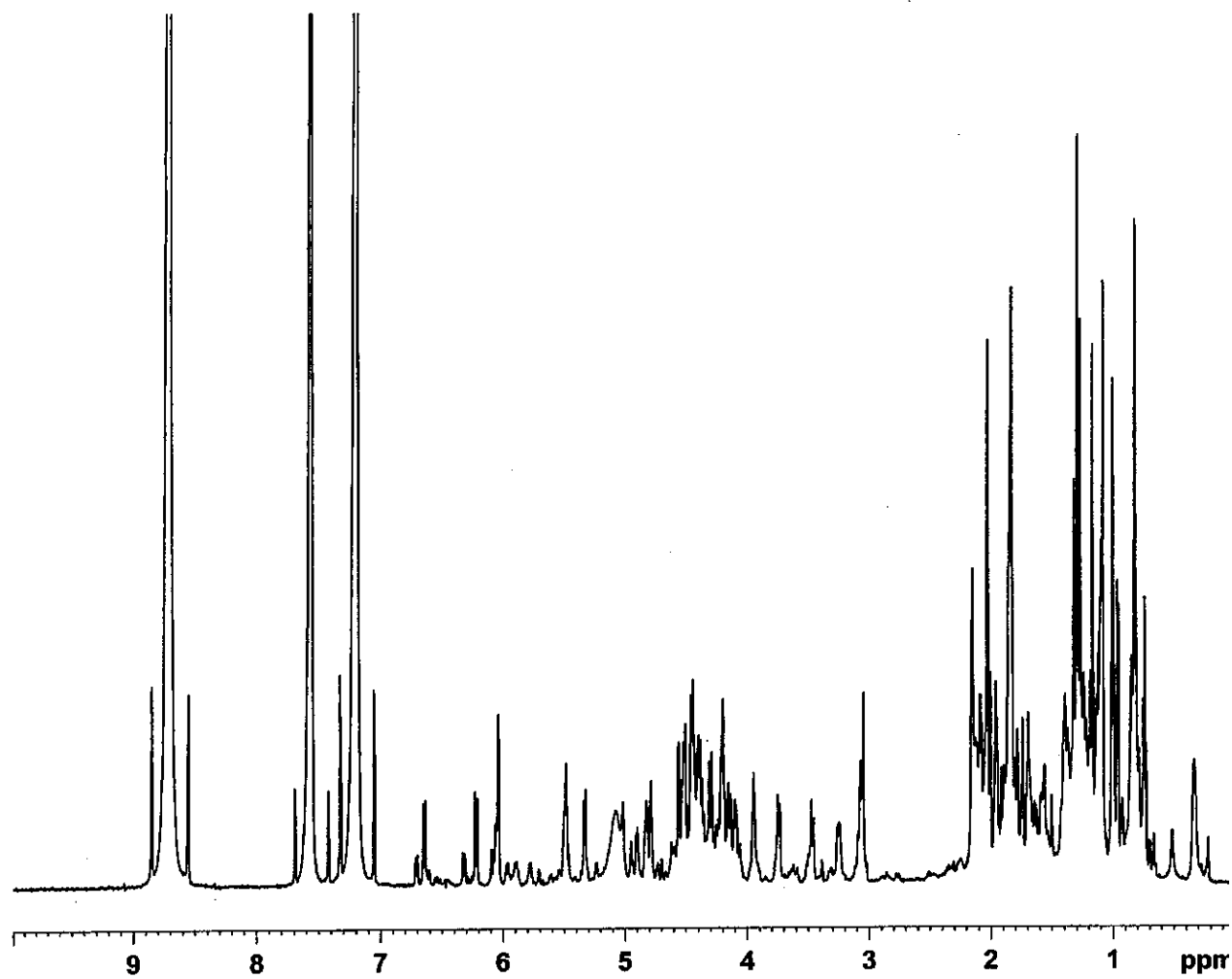
59/66
Figure 56
O54-HMBC



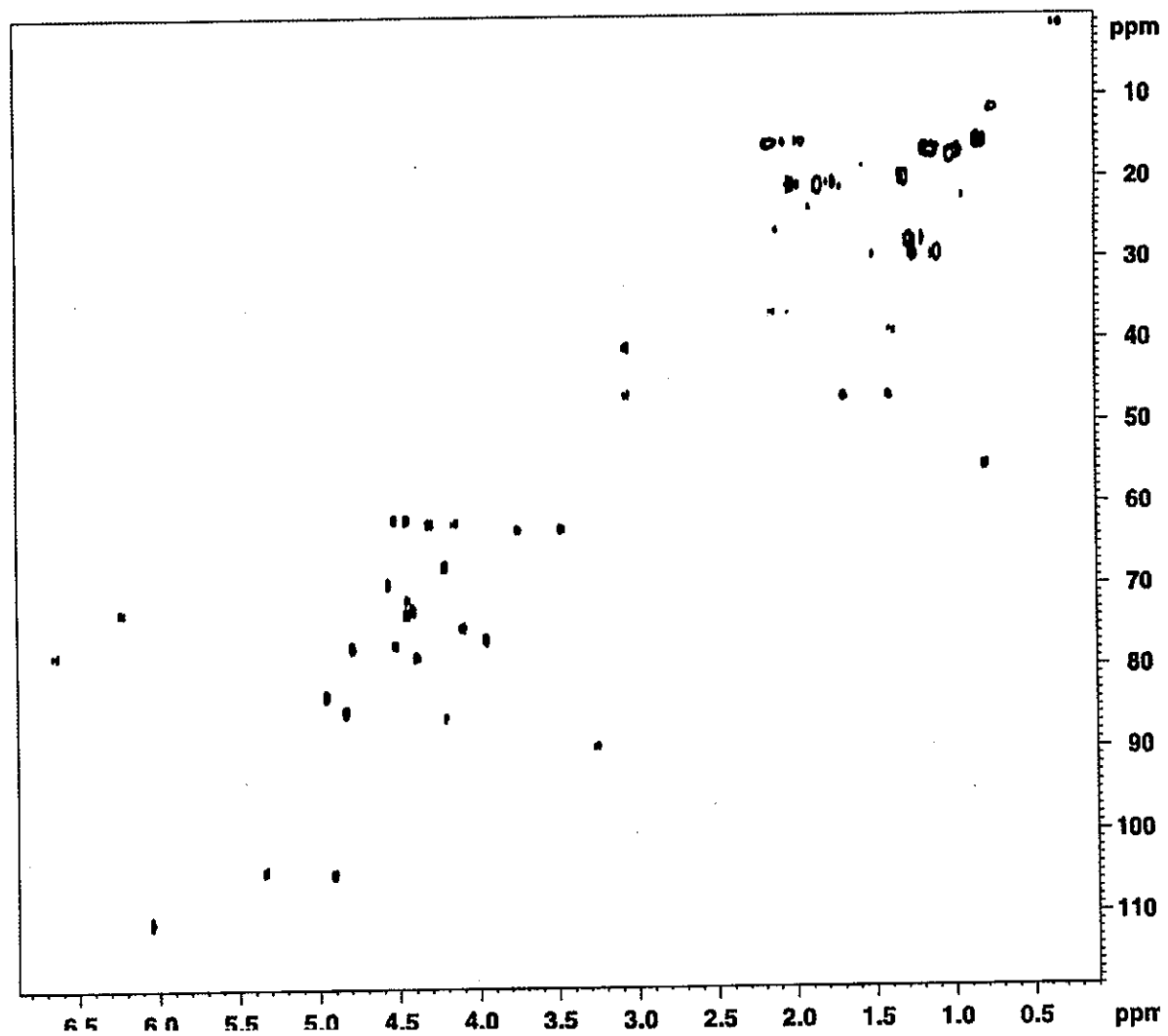
60/66
Figure 57



61/66
Figure 58
H-NMR of Y4

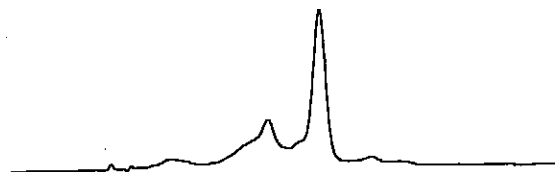


62/66
Figure 59
HMQC of Y4

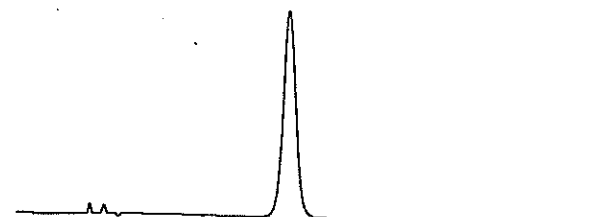


63/66
Figure 60

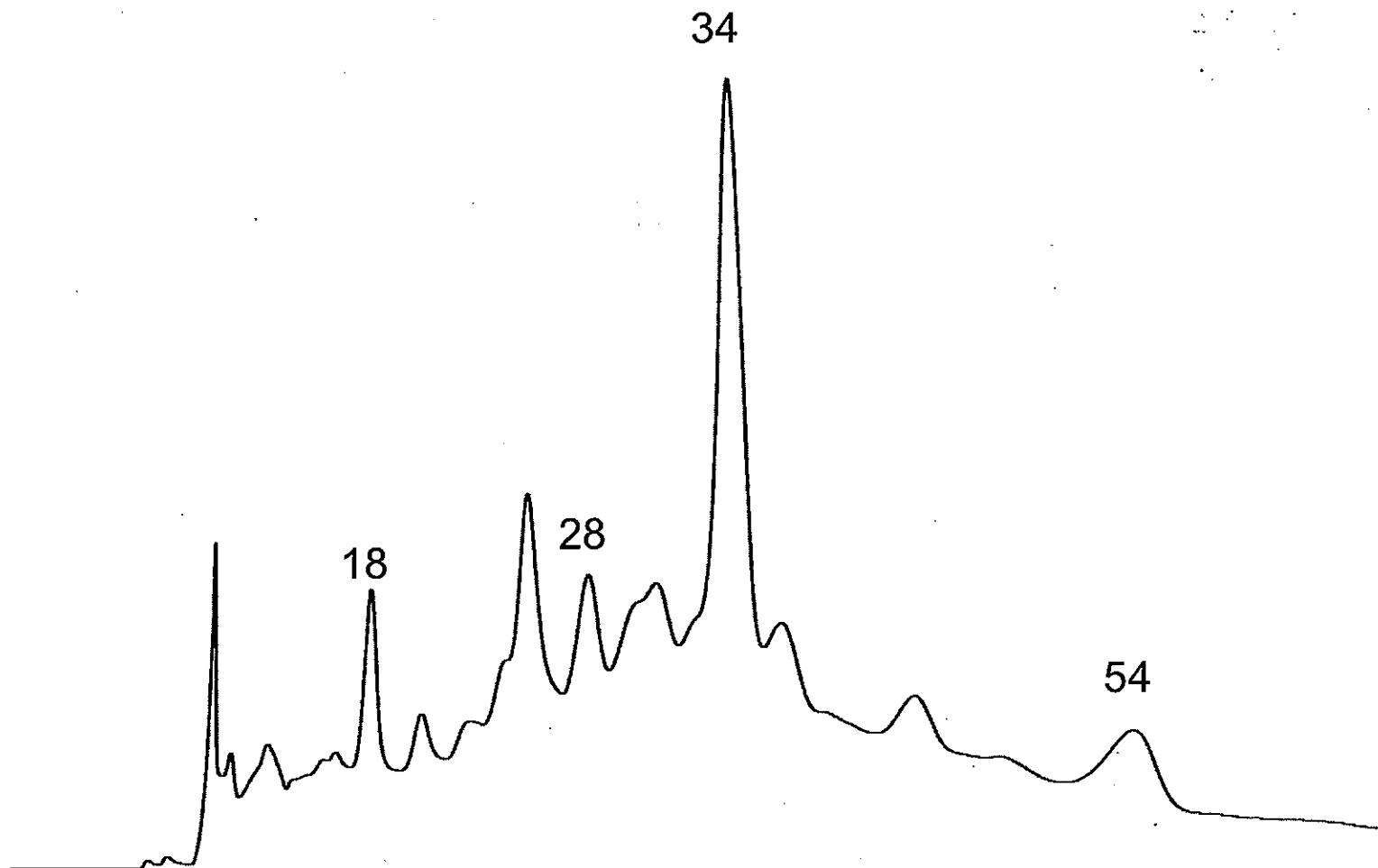
A



B



64/66
Figure 61
(iso-20)

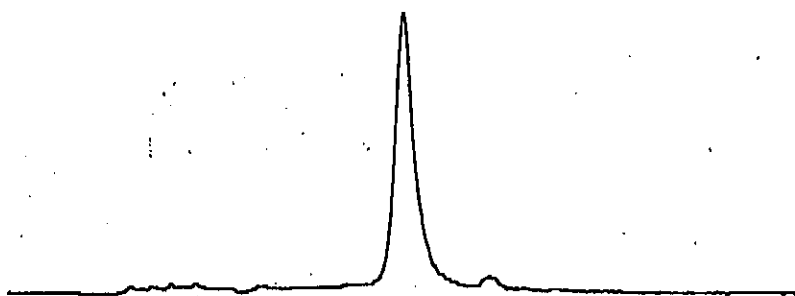


65/66

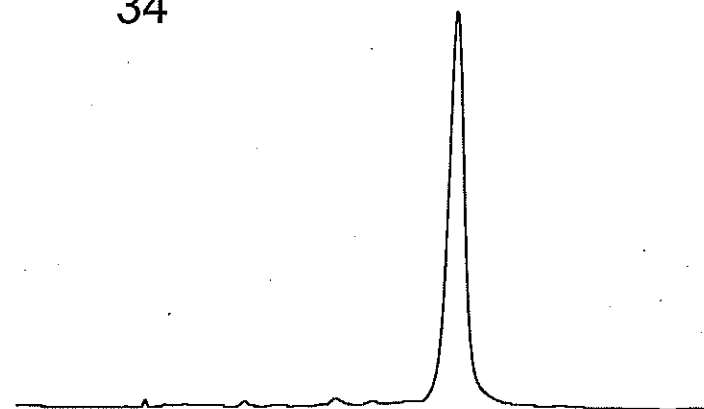
Figure 62

Re-chromatography of #28 and #34 (from iso-20)

28



34



66/66

Figure 63

Re-chromatography of #54 (from iso-20)

