Synthesis of 6-amino-1-phenyl-4-(3,4,5 tri methoxy phenyl) 1,4-di hydropyrano [2,3,c] pyrazol-5-carbonitril derivatives as antimicrobial agents.

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Abstract

Final compound were synthesized by reaction of 3 methyl-1-phenyl-2-pyrazolin 5-one with malonic nitrile and substituted aromatic aldehydes in present of catalyst and were tested for their antimicrobial activity.

Introduction

Pyrazoles are biologically interesting compounds and their chemistry has recently received considerable attention, Several pyrazoles are also reported to have useful biological effects such as analgesic and anti-inflammatory activities [1-9] by this we synthesized 6-amino-1-phenyl-4-(substituted-phenyl)1,4 di hydro pyrano [2,3,c] pyrazol-5-carbonitril.

Experimental

All melting points were determined in open capillary and are uncorrected. The purity of compound was check by TLC on silica gel "G" coated plates. IR spectra (KBr) were recorded on a perkin-Elmer spectrophotometer. PMR spectra were recorded on a Perkin-Elemer spectra photometer using TMS internal reference (chemical shift in ppm)

synthesized of 3methyl-1-phenyl-2-pyrazolin 5 one were done by known method Fig:1.

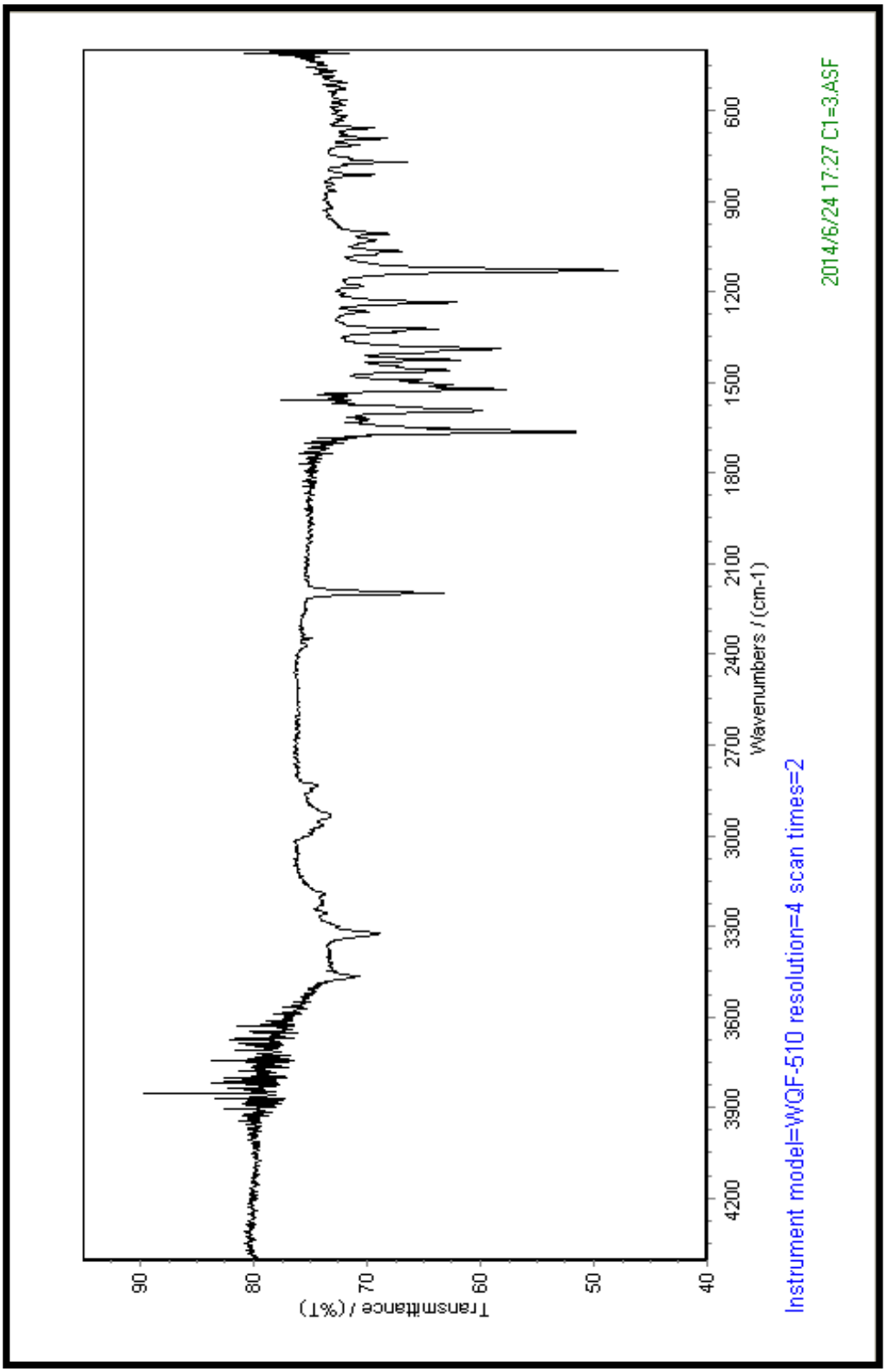
Fig:1

Synthesis of 6-amino-1-phenyl-4-(3,4,5 trimethoxy phenyl) 1-4-D1 hydro pyrano [2,3,c] pyrazol-5-carbonitryl.

A mixture of 3-methyl-1-phenyl-2-pyrazolin-5-one (0/174gm, 0/01mol), Benzoldehyde (0/01 mol) and malononitrile (0/066 qm 0/01 mol) were taken a 30ml Ethanol and then (0/034gml) catalyst were added and the mixture refuxed for 8 hrs. the reaction mixture cool and ppt was separated and crystalized from appropriated solvent M.P-187-188C

IR(KBr) cm -1 : 3350-3450 (–NH2);2200 (CN);1580 (C=C Phenyl)
H-NMR:1/8ppm(s, 3,H,C-CH3); 3/73ppm(s,9H,O-CH3);4/65ppm(m,2H,NH2)
^{13}C NMR:12/63ppm(-NH2); 36/69 ppm(-Benzyl)); 55/02 ppm(-CN);58/03ppm(-OCH3)

Similarly other compounds of the series have been prepared and were characterized by their IR, H-NMR and ^{13}C NMR.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3600
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1200
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Wavenumbers / (cm-1)
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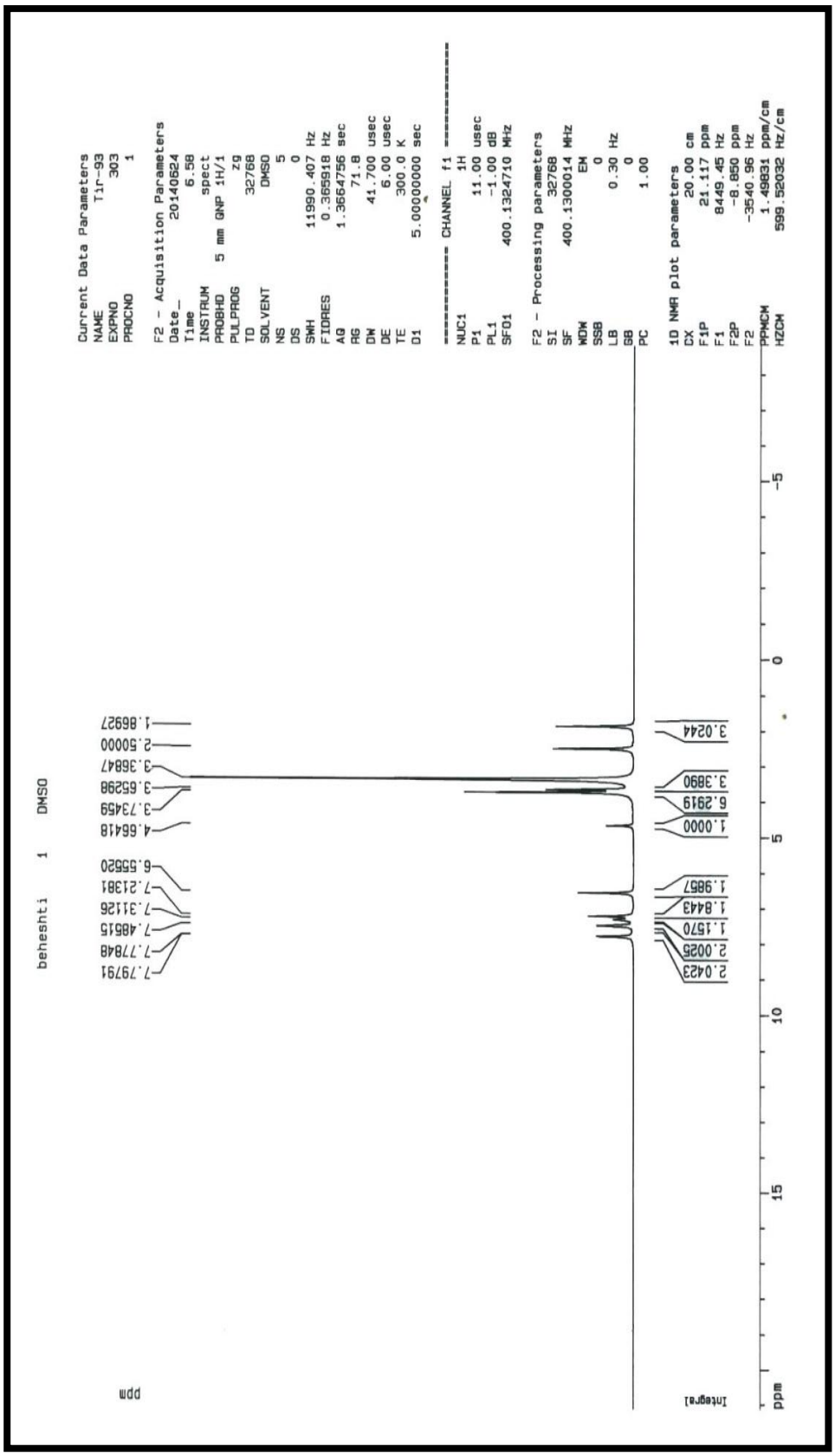
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DW 41.700 usec
DE 6.00 usec
TE 300.0 K
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F2 -3540.96 Hz
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HZCM 599.52032 Hz/cm
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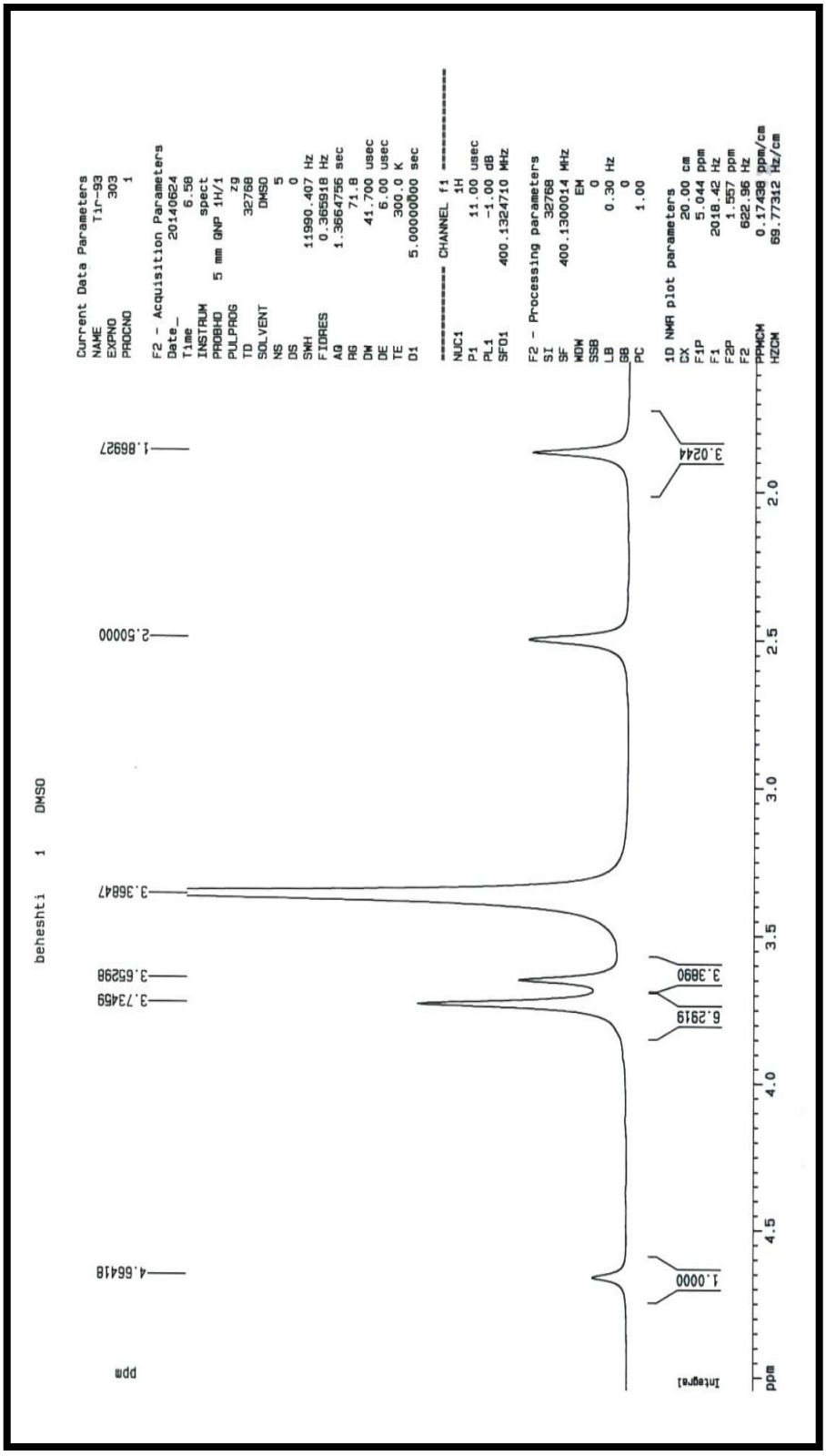
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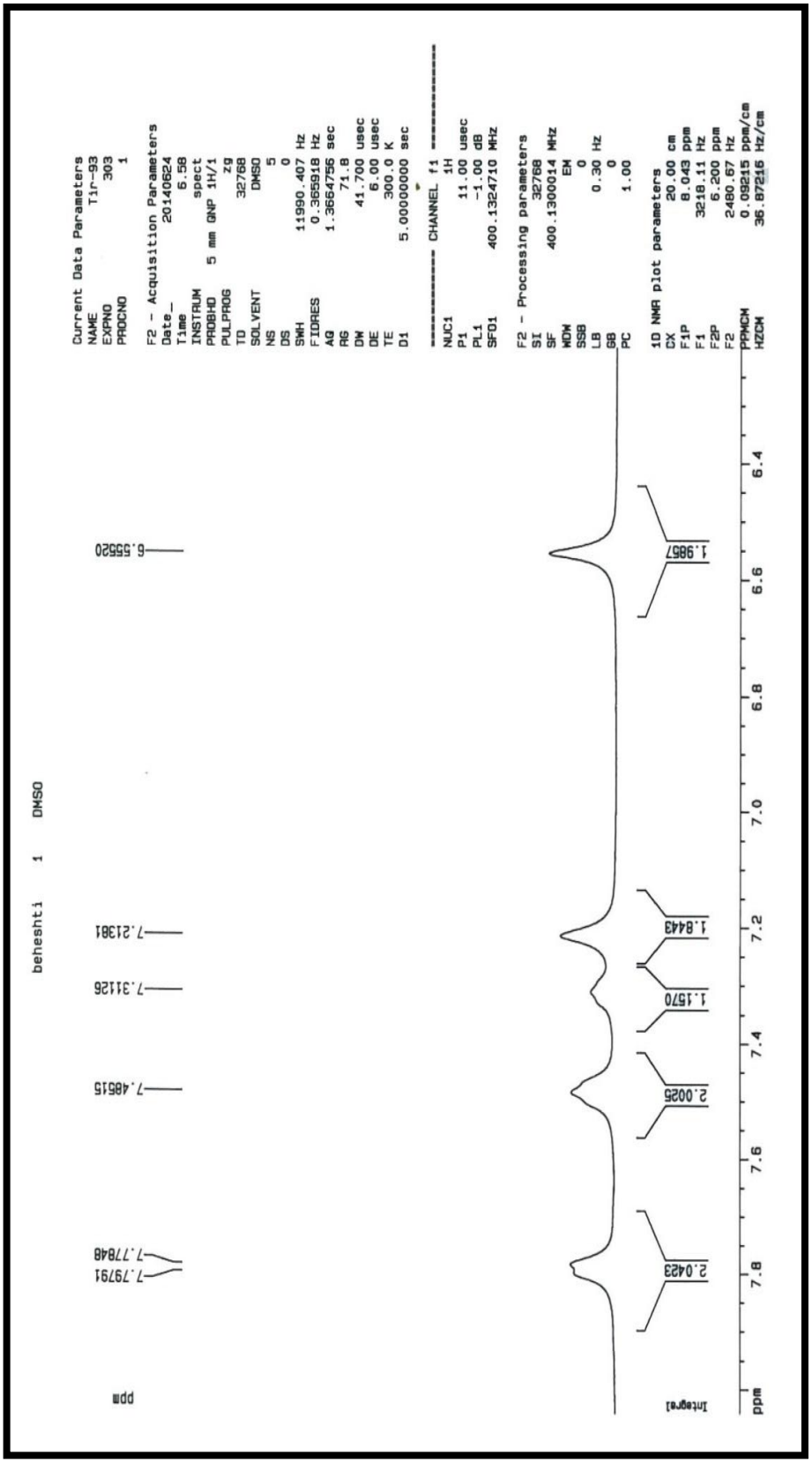
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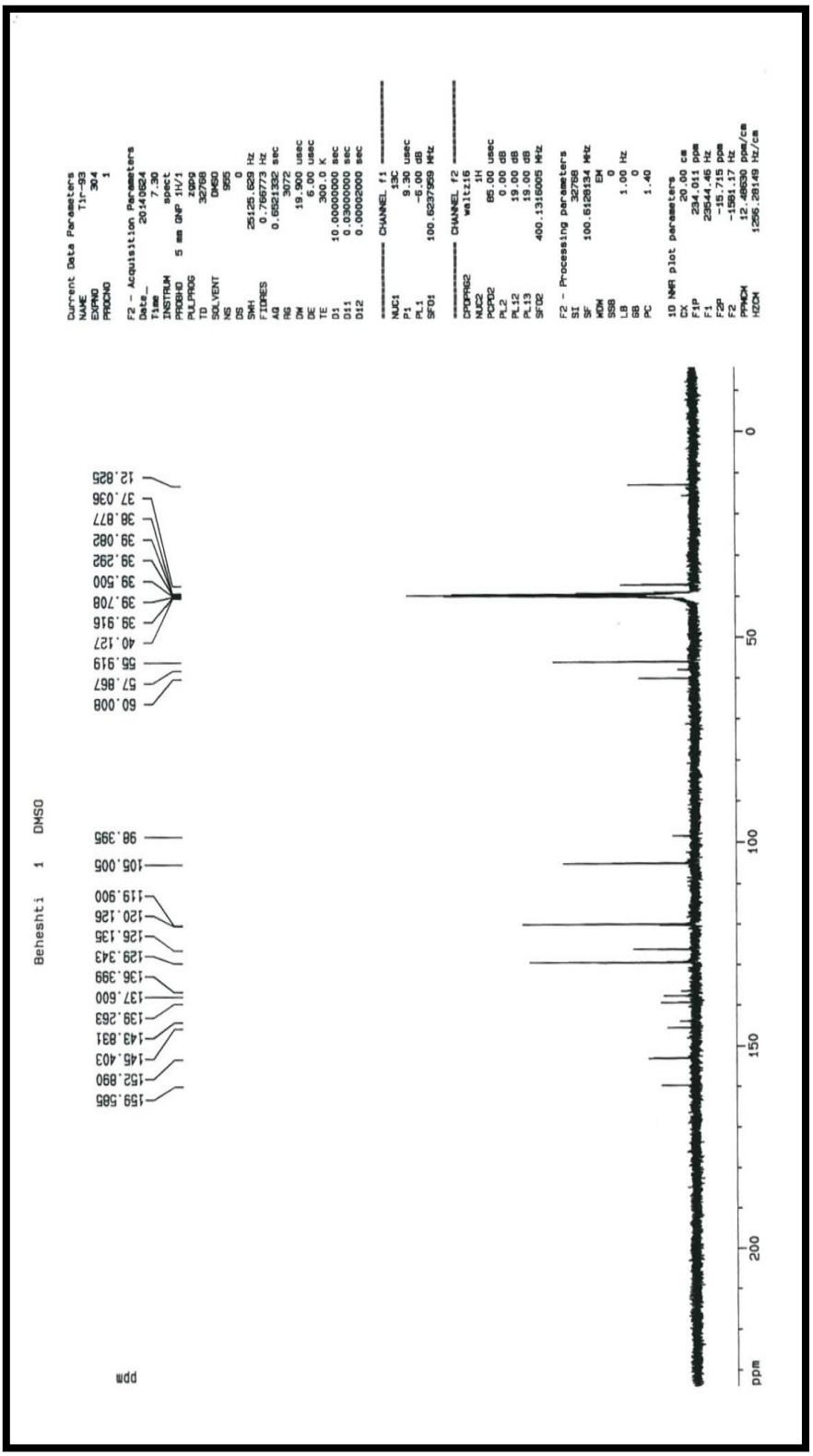
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RG 3072
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D11 0.03000000 sec
D12 0.00002000 sec
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CHANNEL f2
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F2 - Processing parameters
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SSB 0
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HZCM 1256.28149 Hz/cm
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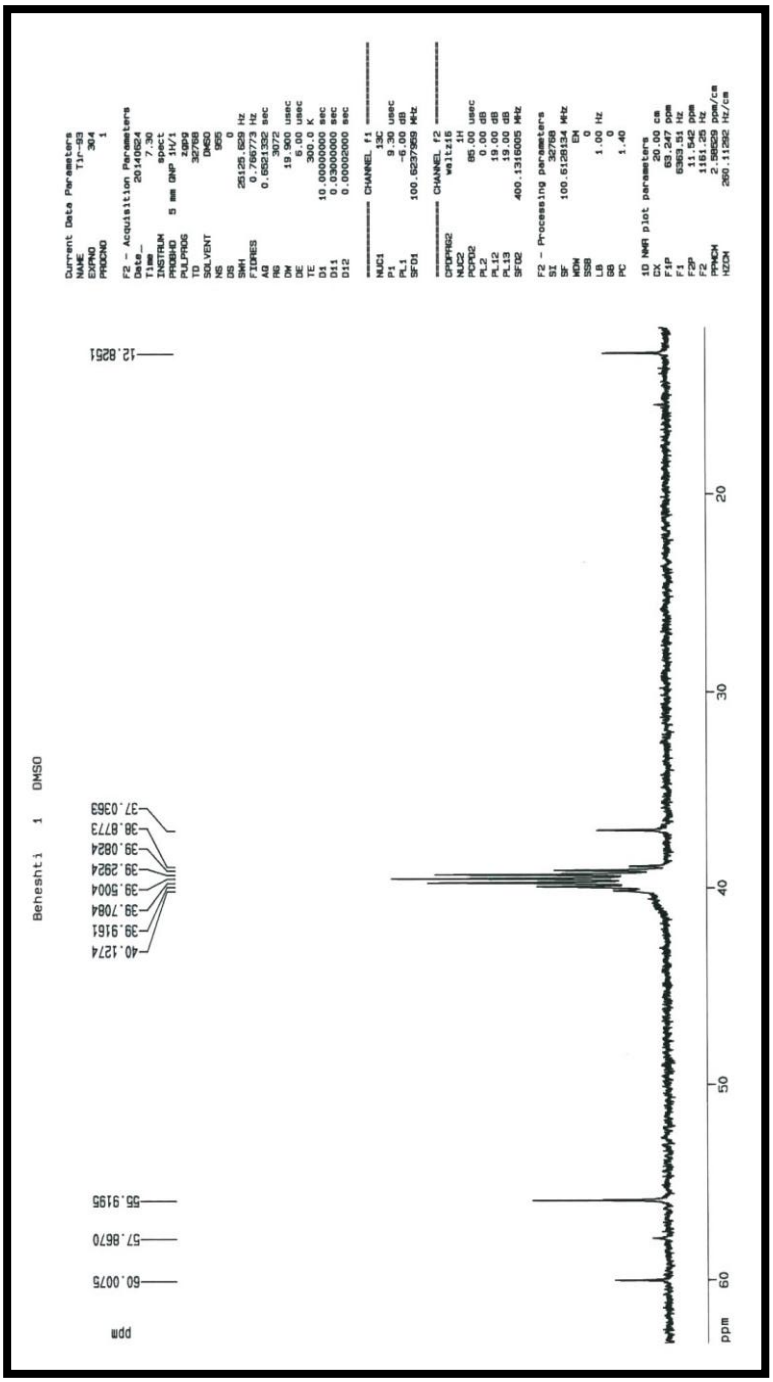
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F2P 11.545 ppm
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HZCM 260.11392 Hz/cm
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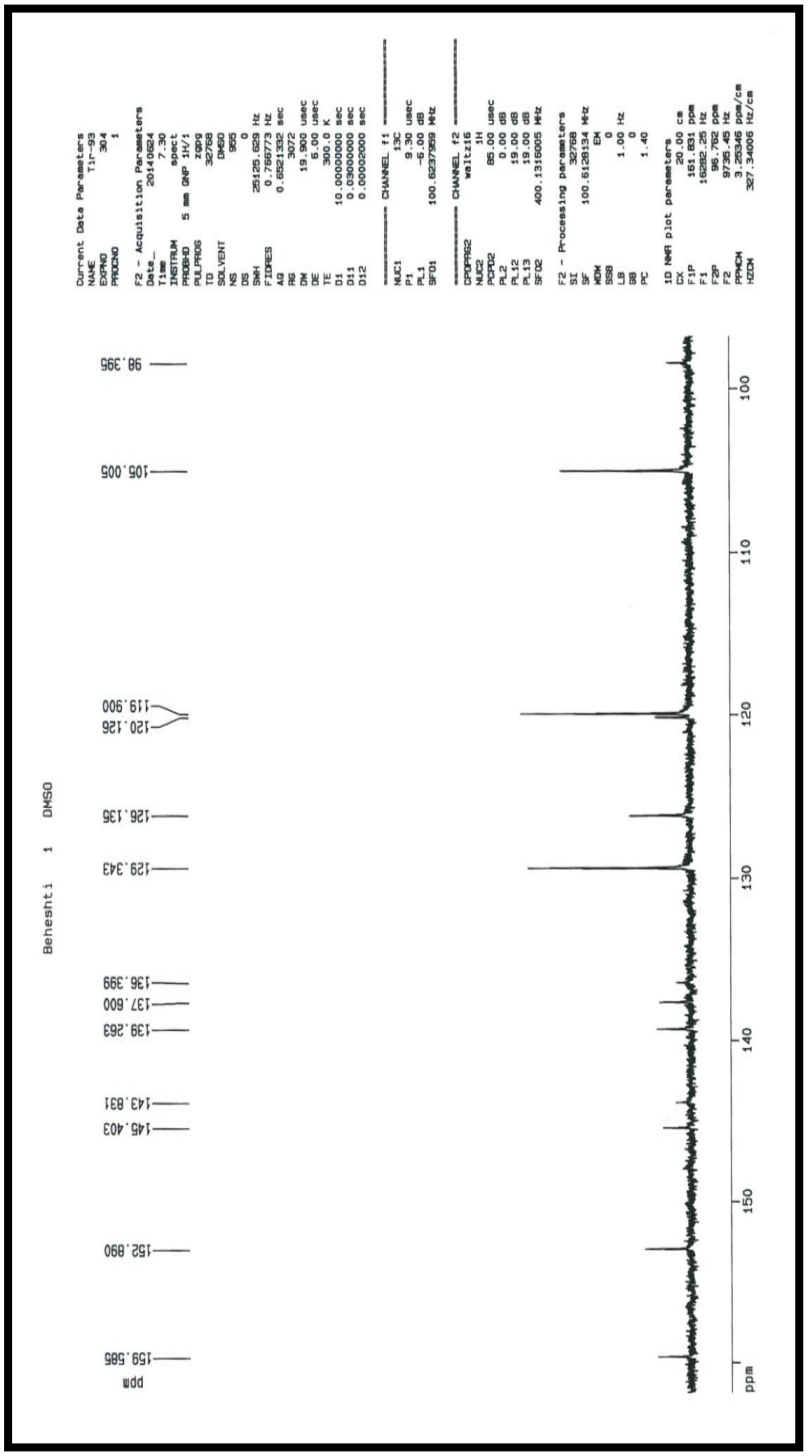
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PL13 19.00 dB
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F2P 95.782 ppm
F2 9735.45 Hz
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Behesht1 1 DMSO
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Refrences:

[1] Brunavs, M.; Dell, C. V.; Gallagher, P. T.; Owton, W. M.; Smith, C. W. *European Patent Appl*. 557075, **1974**: [C. A. 120, 106768t, **1994**].

[2] Zayed, S. E.; Abou Elmaged, E. L.; Metwally, S. A.; Elnagdi, M. H. *Czech Chem.Commun.* **1991**, *56*, 2175.

[3] Bonsignore, L.; Loy, G.; Secci, D.; Calignano, A. *Eur. J. Med. Chem*. **1993**, *28*, 517.

[4] Konkoy, C. S.; Fick, D. B.; Cai, S. X.; Lan, N. C.; Keana, J. F. W. PCT Int. Appl. WO 0075123, **2000**; *Chem. Abstr*. **2001**, *134*, 29313a.

[5] Sun, H. B.; Hua, W. Y.; Chen, L.; Peng, S. X.; Wang, T.; Liu, G. Q. *Chem. J. Chin. Univ.* **1997**, *18*, 730.

[6] Naresh, S. Badgujar.; Nilambari, N. Yewalkar.; Madhukar, N. Jachak *Chem. Abstr*. **1976**, *84*, p164771.

[7] Sato, Y.; Shime, J. Y.; Kumakura, S.; Takagi, H. *Japan. Kokai*, **1975**, *75*, 151. [40] Kuo, S. C.; Huang, L. J.; Nakamura, S.; H. *J. Med. Chem*. **1984**, *27*, 539.

[8] Albadi, J.; Mansournezhad. A.; Derakhshandeh, Z.*Chin. Chem. Lett*. **2013**, *24*, 821.

[9] Azarifar, D.; Khatami, S. M.; Nejat-Yami, R.*J. Chem. Sci*. **2014**, *126*, 95.