

Supporting Information

Synthesis and Properties of 5-Cyano Substituted Nucleoside Analog with a Donor-Donor-Acceptor Hydrogen Bonding Pattern

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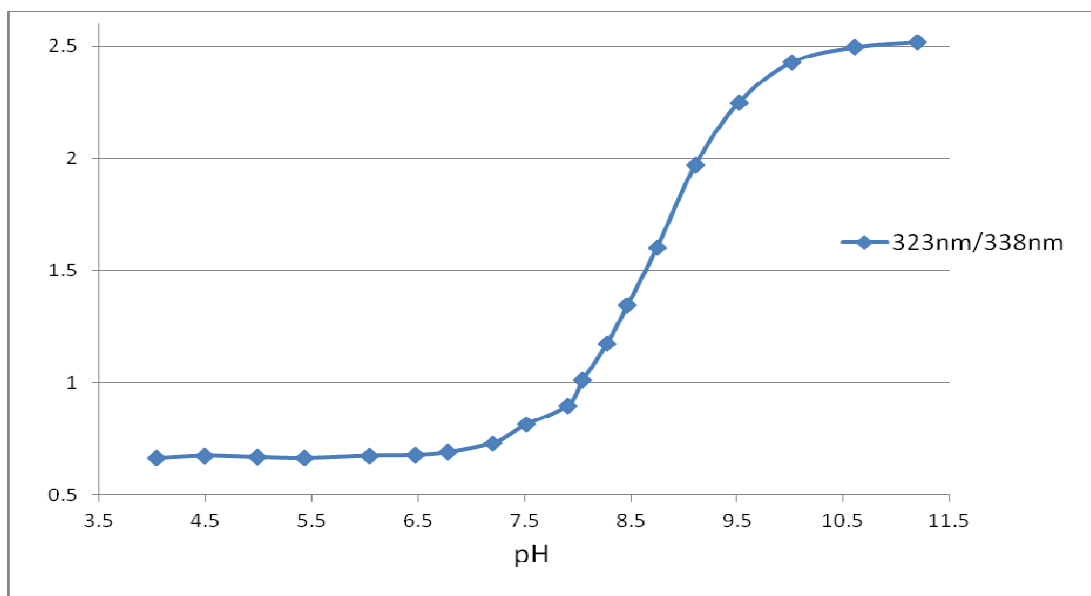


Figure S1. The ratio of absorbance at 323 nm and 338 nm measured as a function of pH give an estimate of the pK_a of 2'-deoxyribonucleoside **4** (cyano-d \mathbf{Z}) to be 8.8.

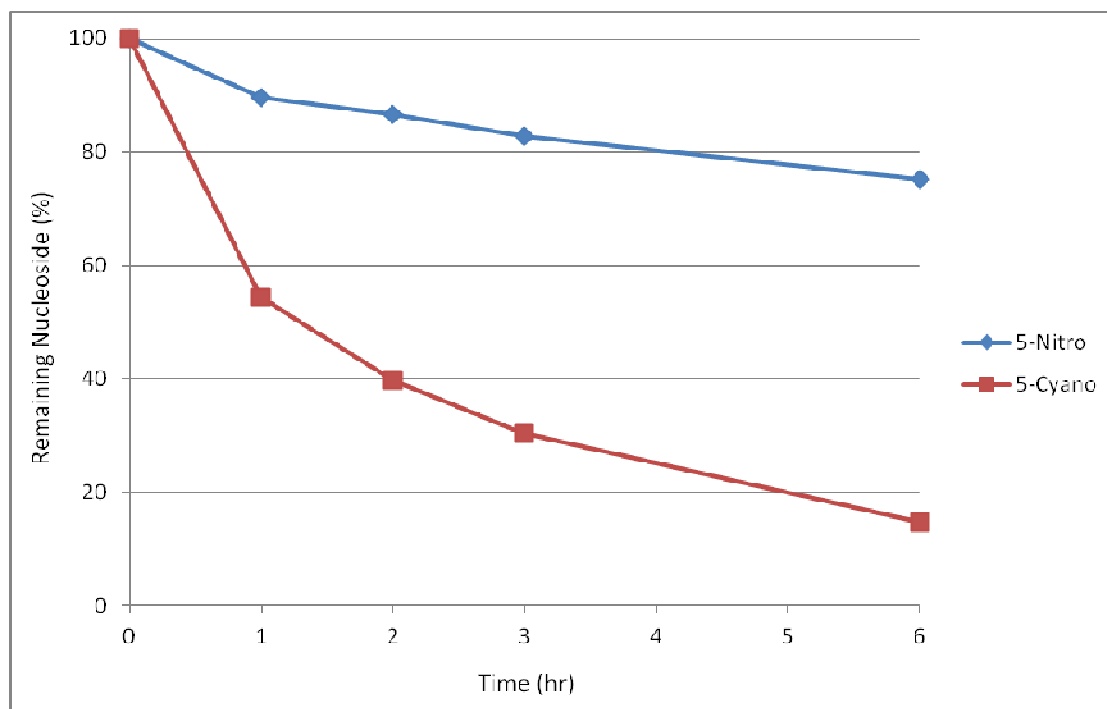


Figure S2. Epimerization of 5-nitro and 5-cyano (**4**) substituted pyDDA nucleosides at pH 2.1 and room temperature.

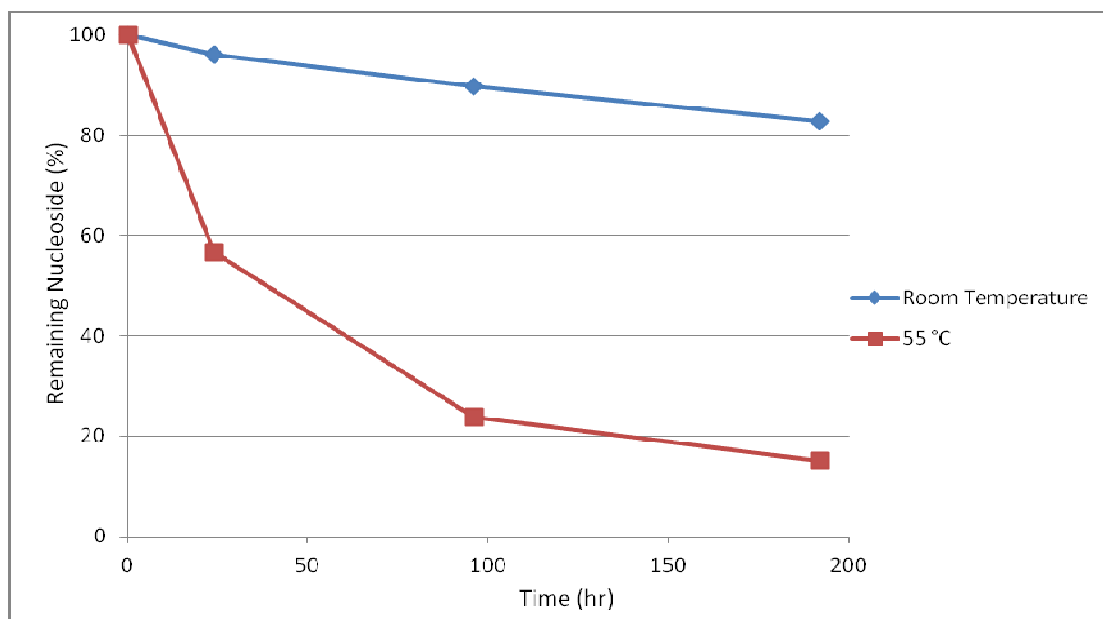


Figure S3. Time courses of epimerization of 5-cyano substituted py-DDA nucleoside (**4**) at pH 7.0 and room temperature or 55 °C.

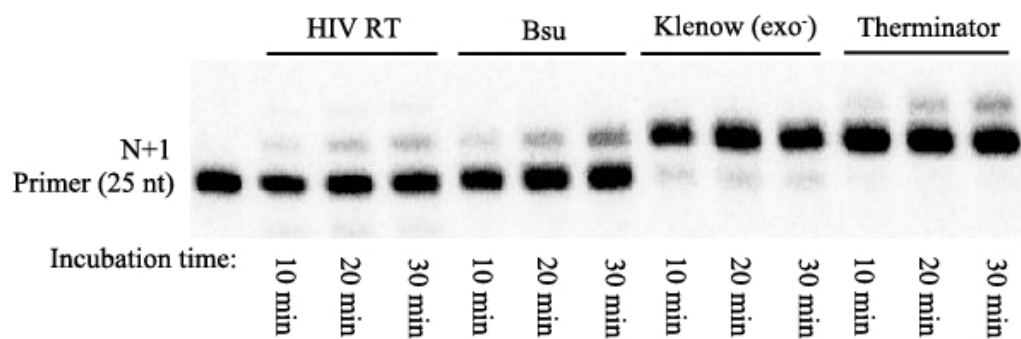
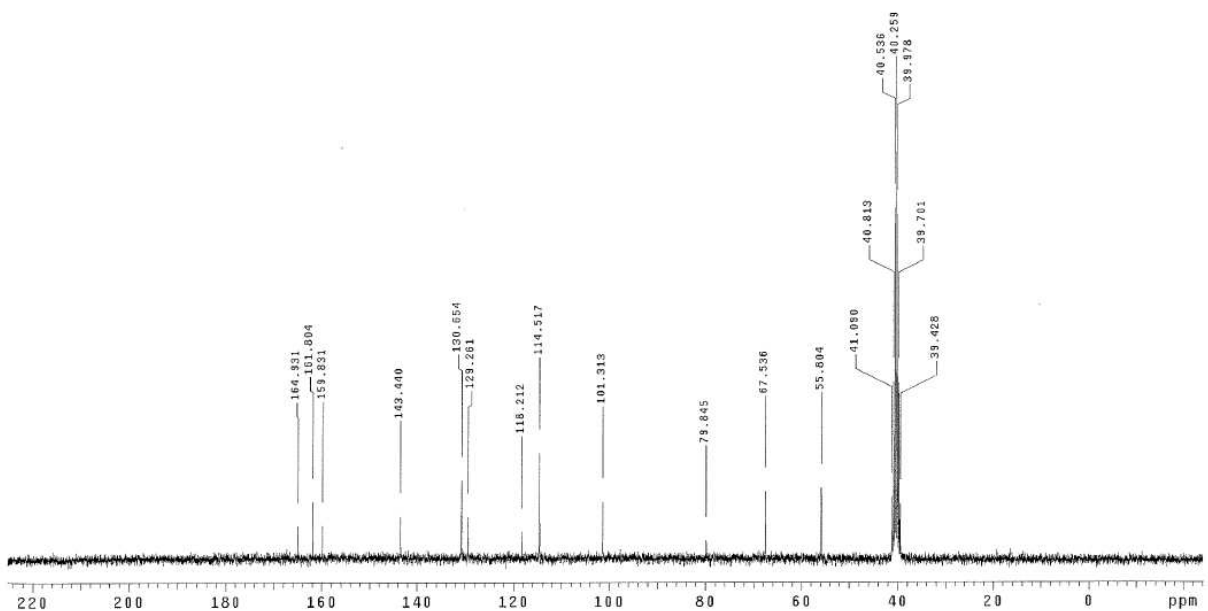
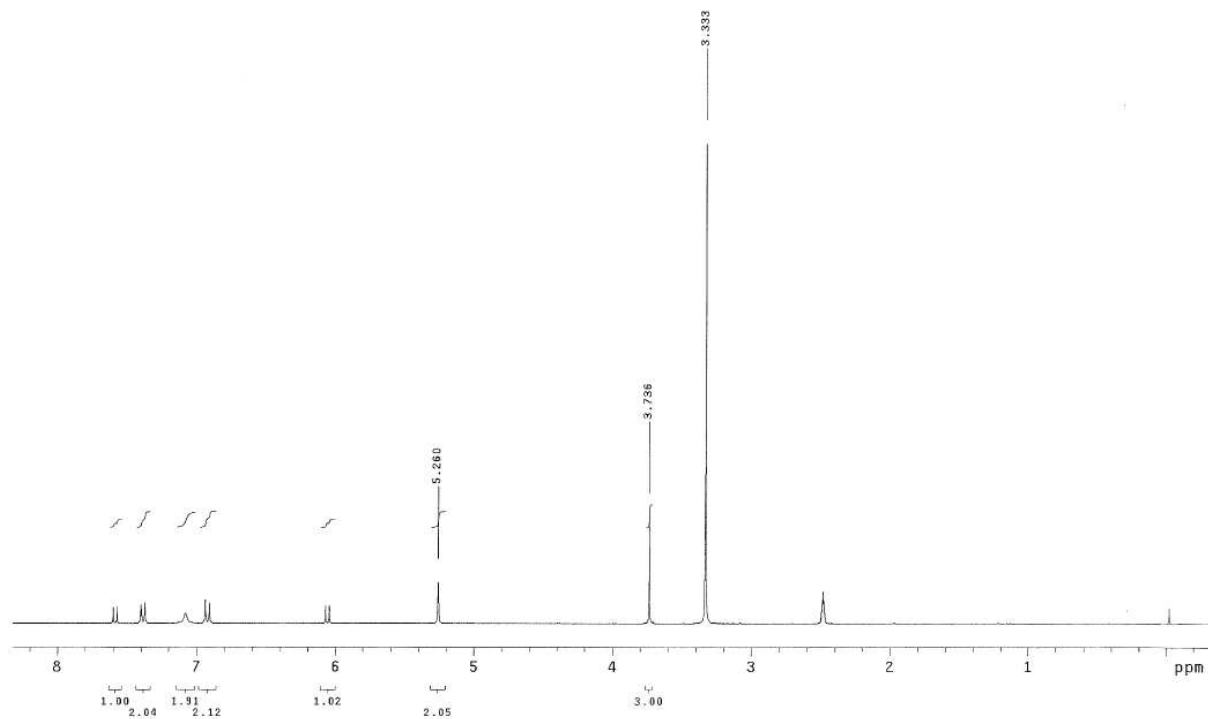
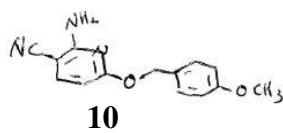


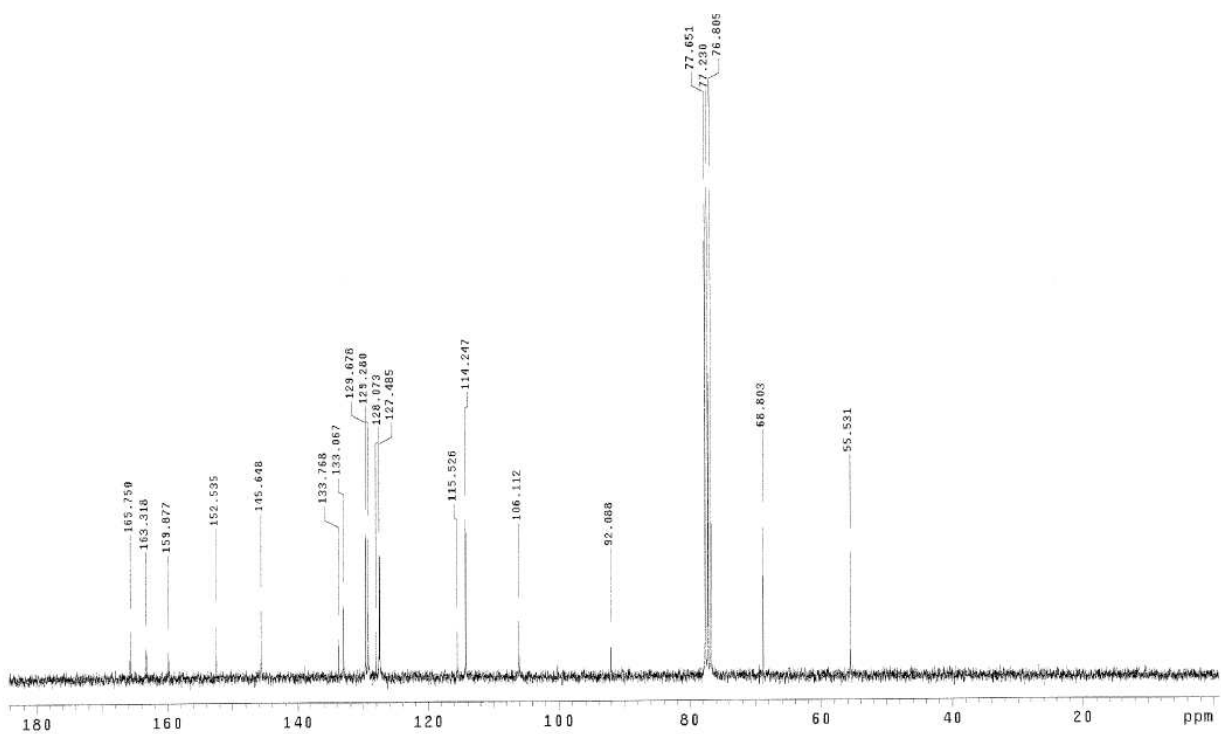
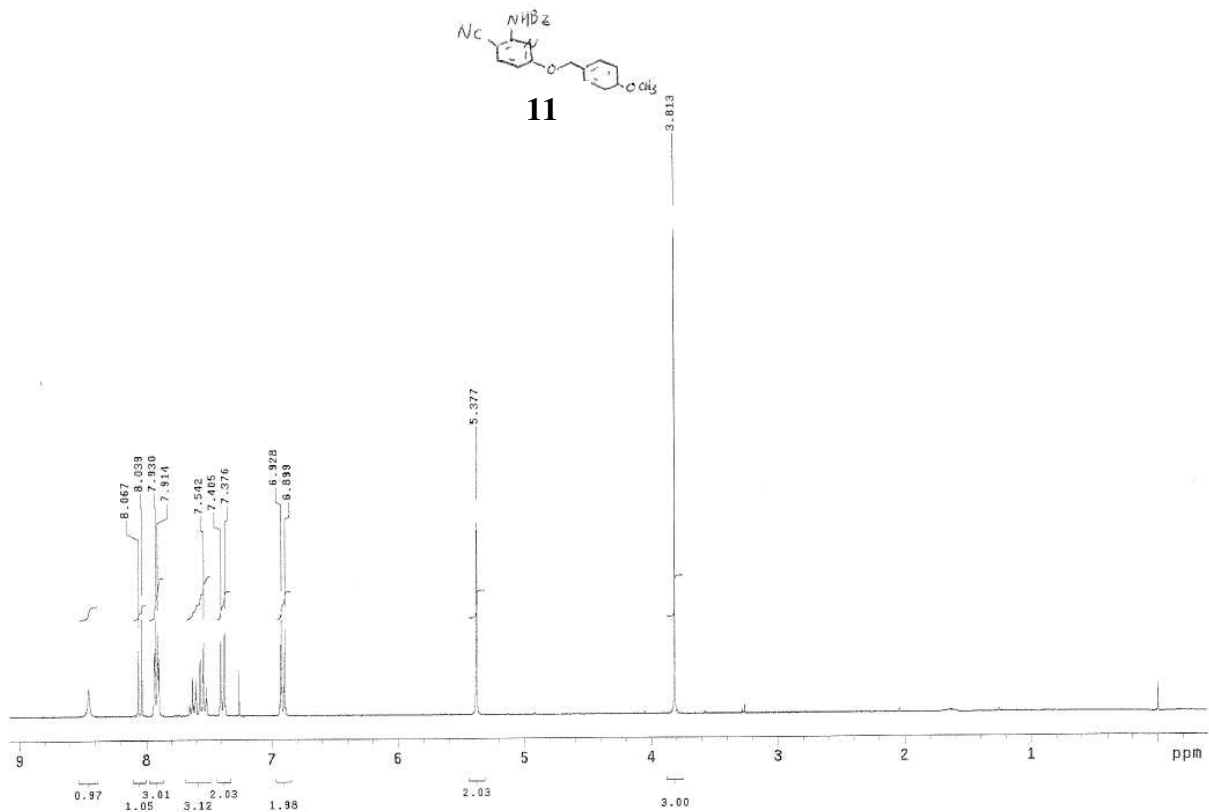
Figure S4. Standing-start primer extension showing the time course of polymerases as they incorporate cyano-dZTP (**16**) opposite template dP.

STANDARD 1H OBSERVE

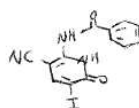
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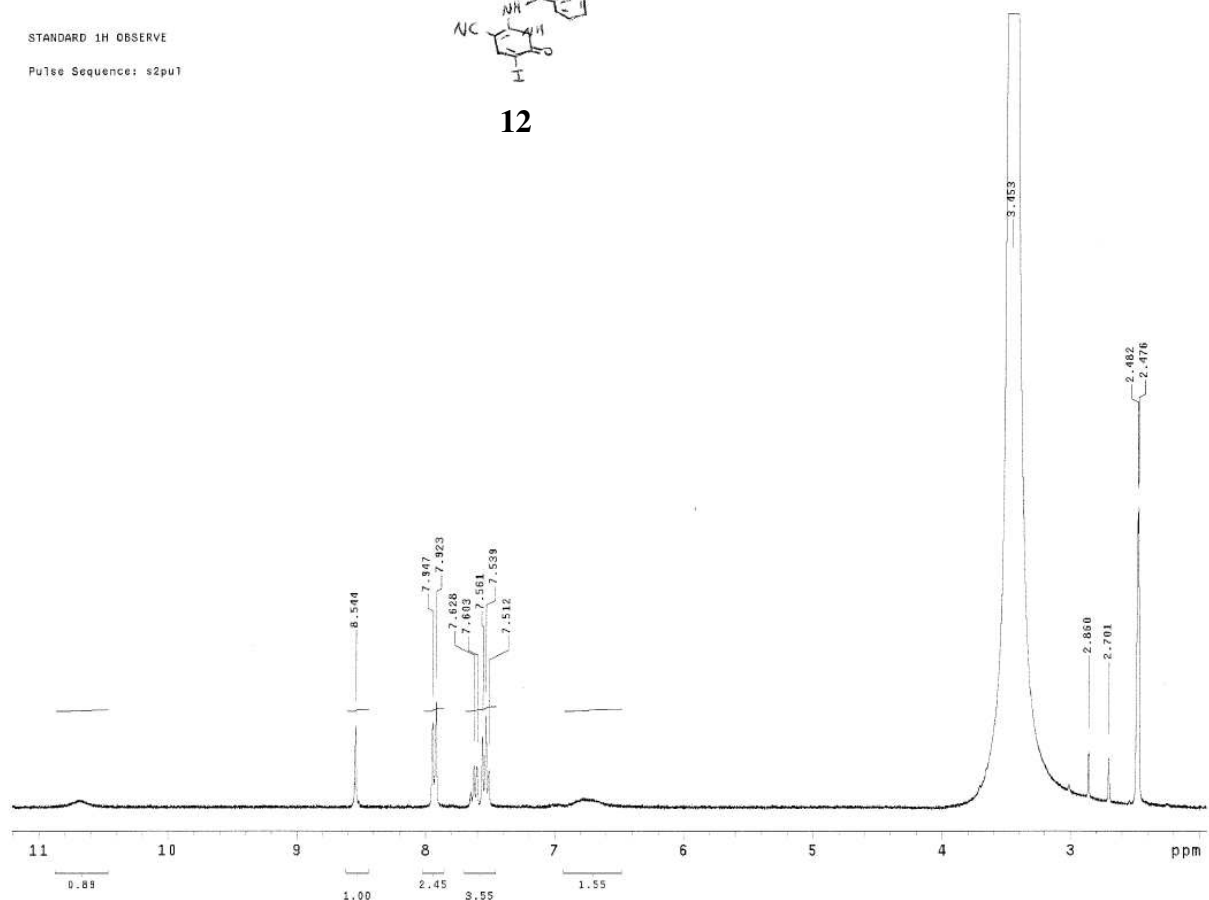
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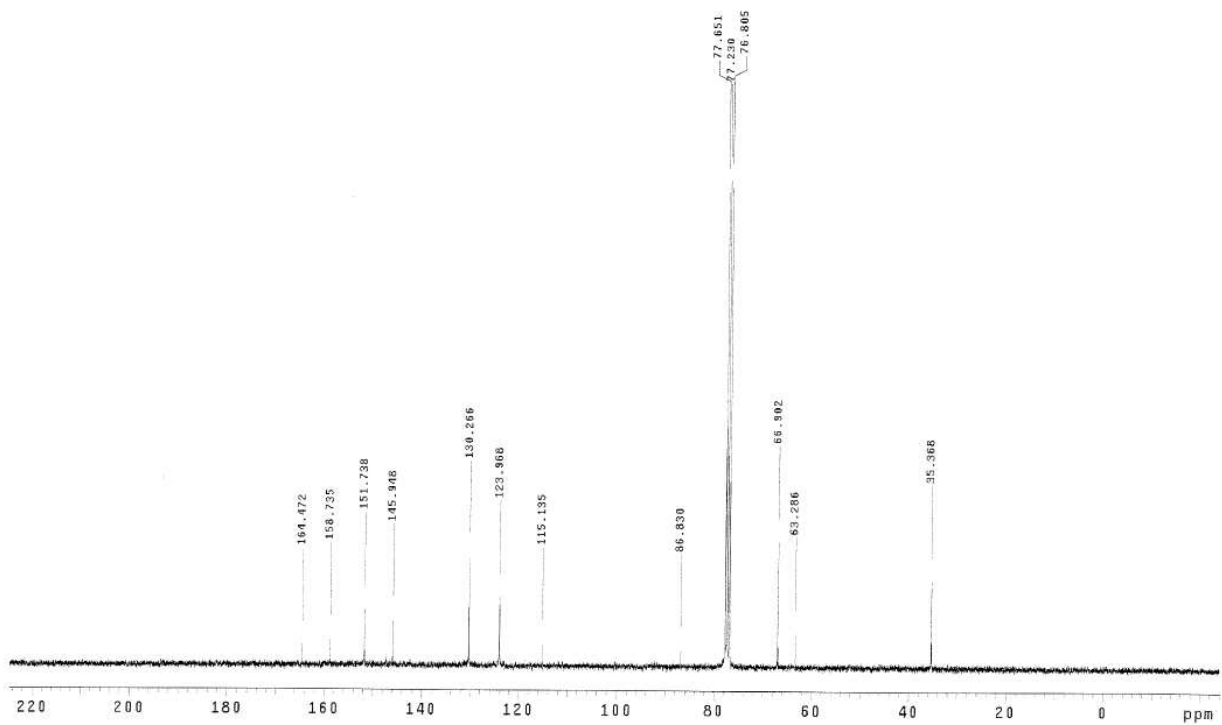
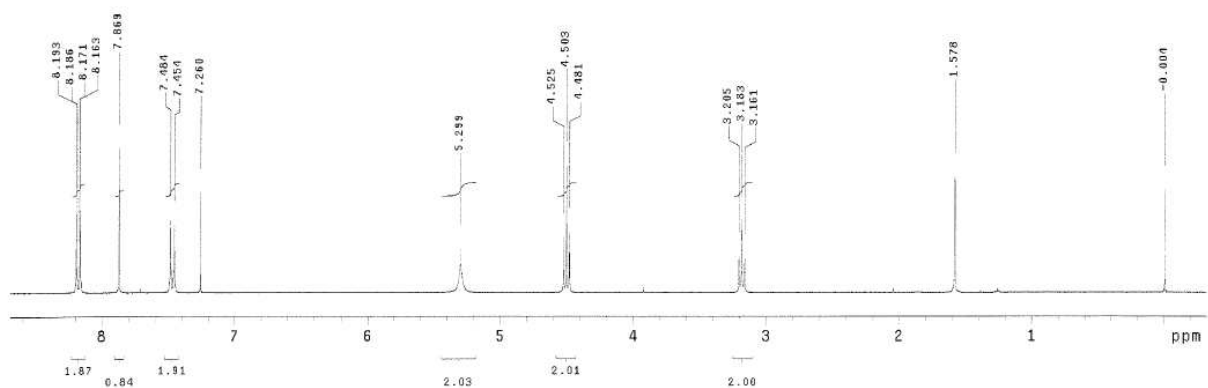
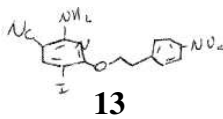
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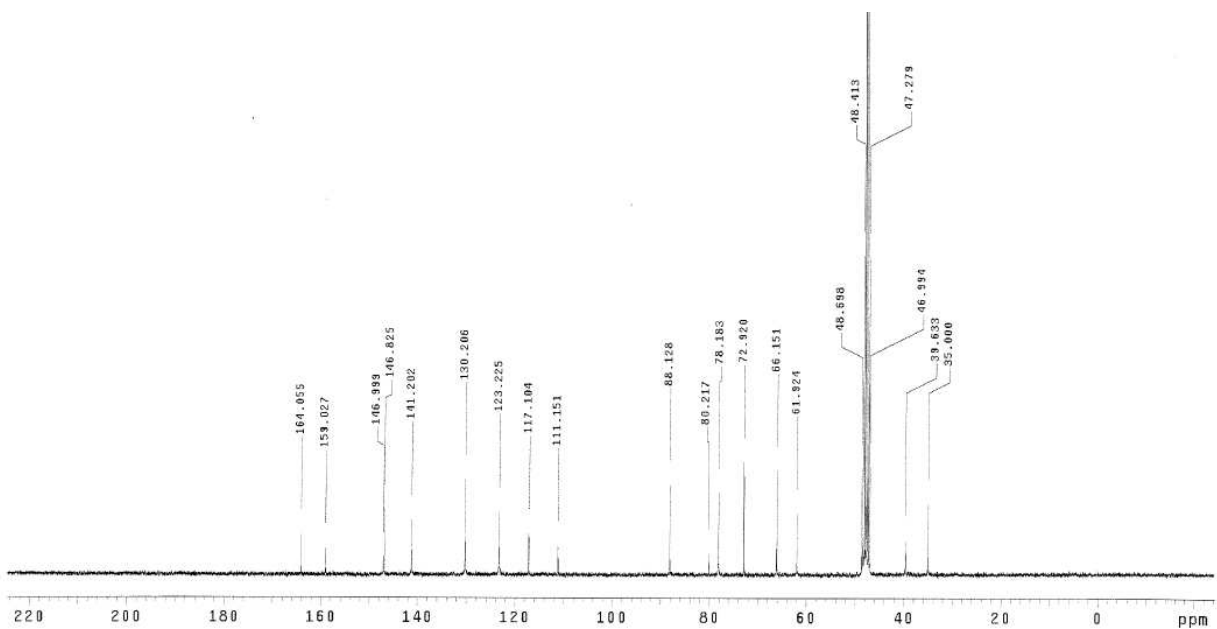
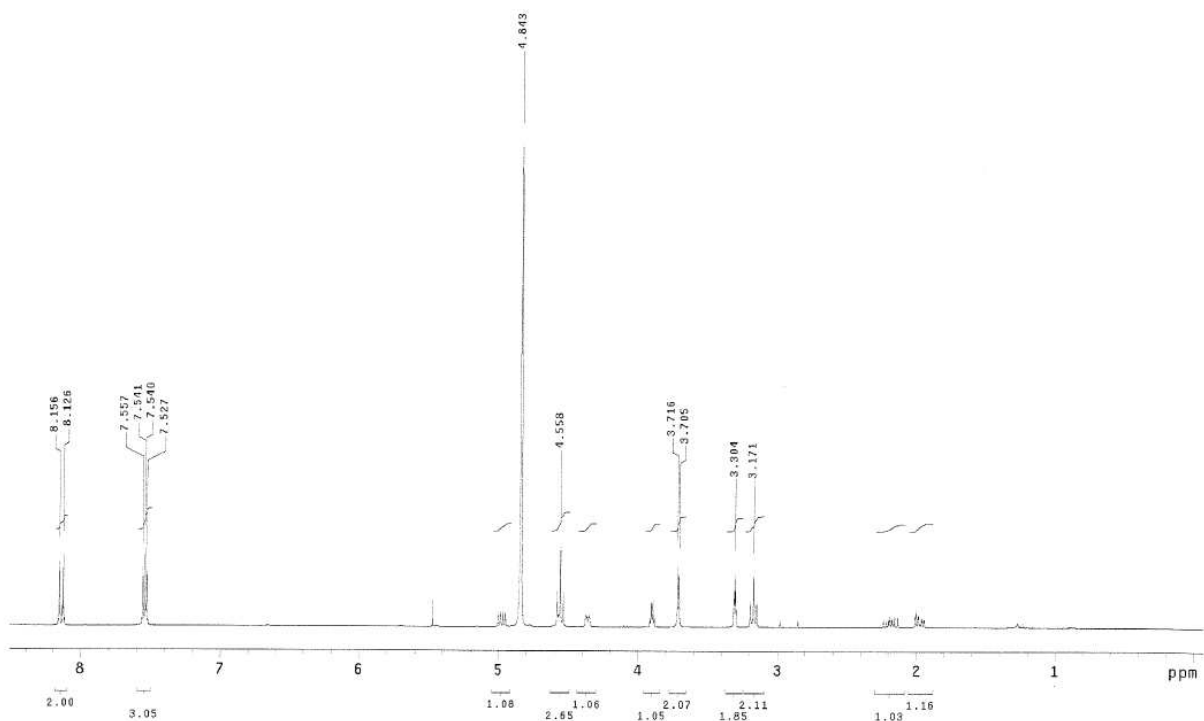
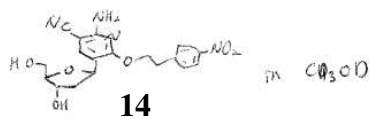
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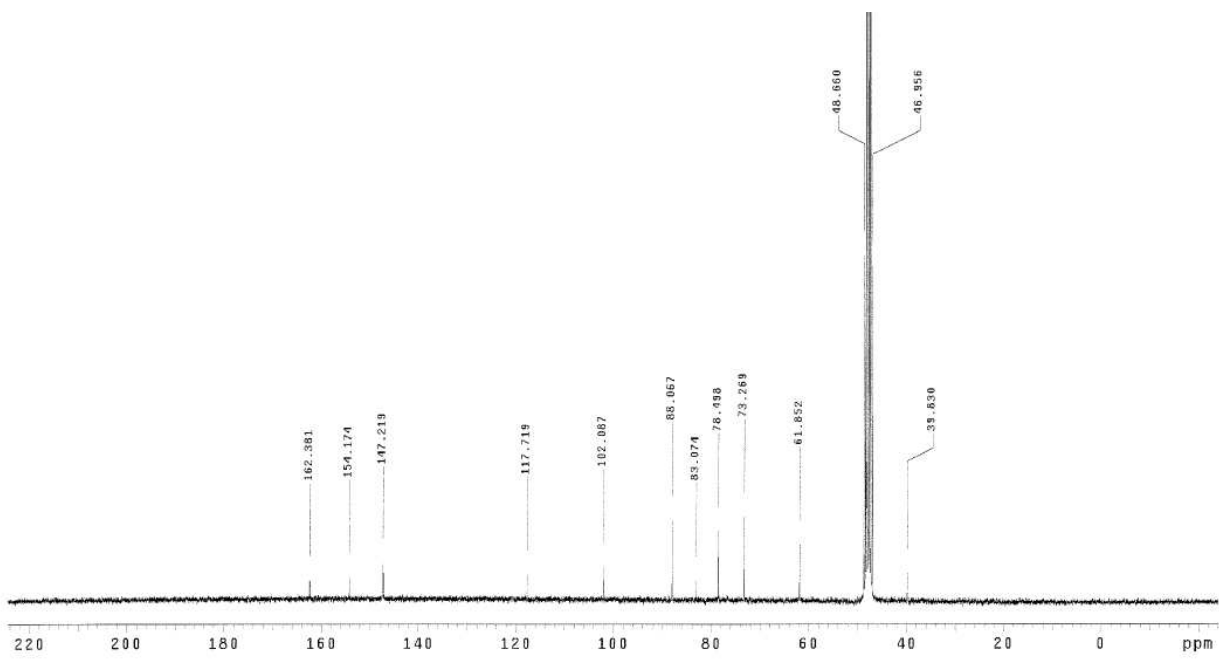
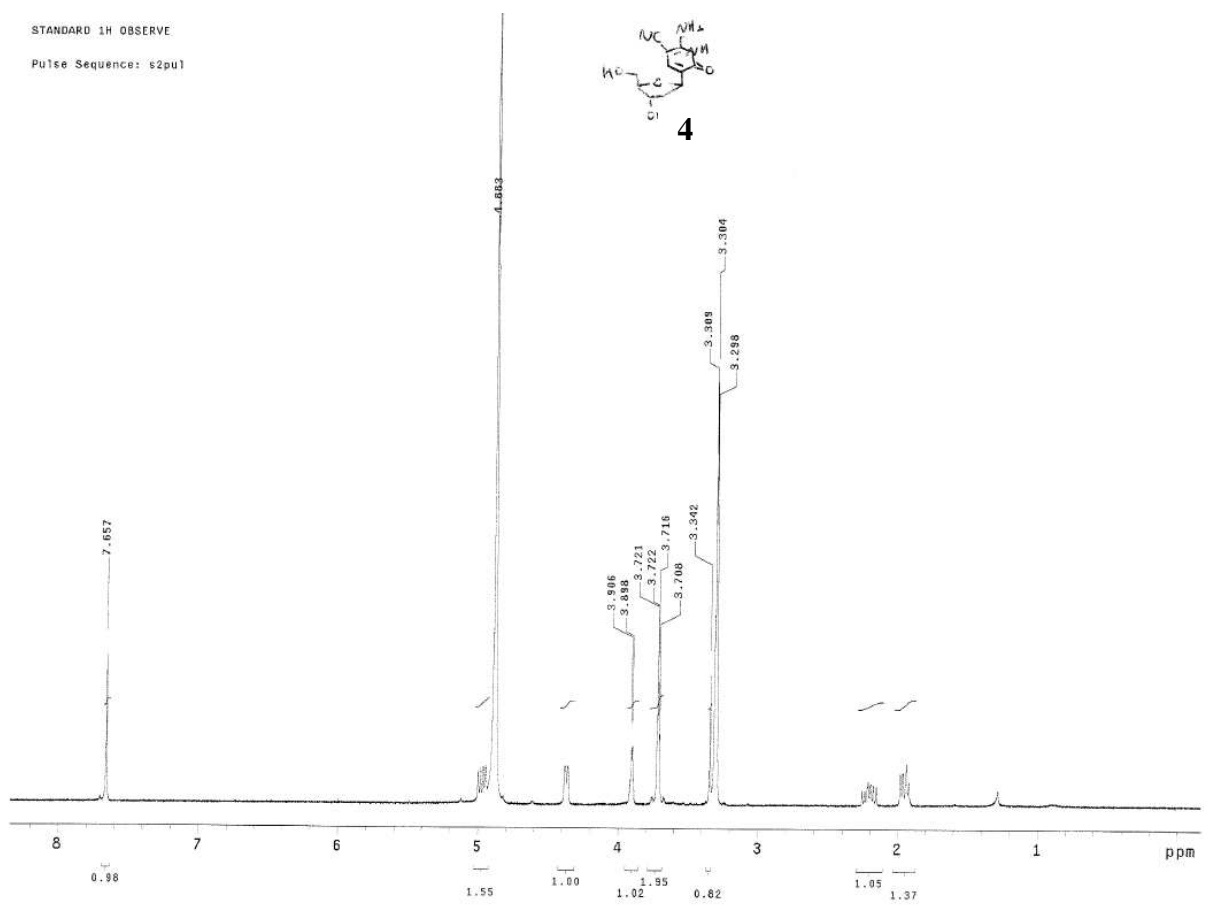
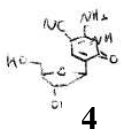
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STANDARD 1H OBSERVE
Pulse Sequence: s2pu1



STANDARD 1H OBSERVE
Pulse Sequence: e2pu1



STANDARD 1H OBSERVE
Pulse Sequence: s2pu1

