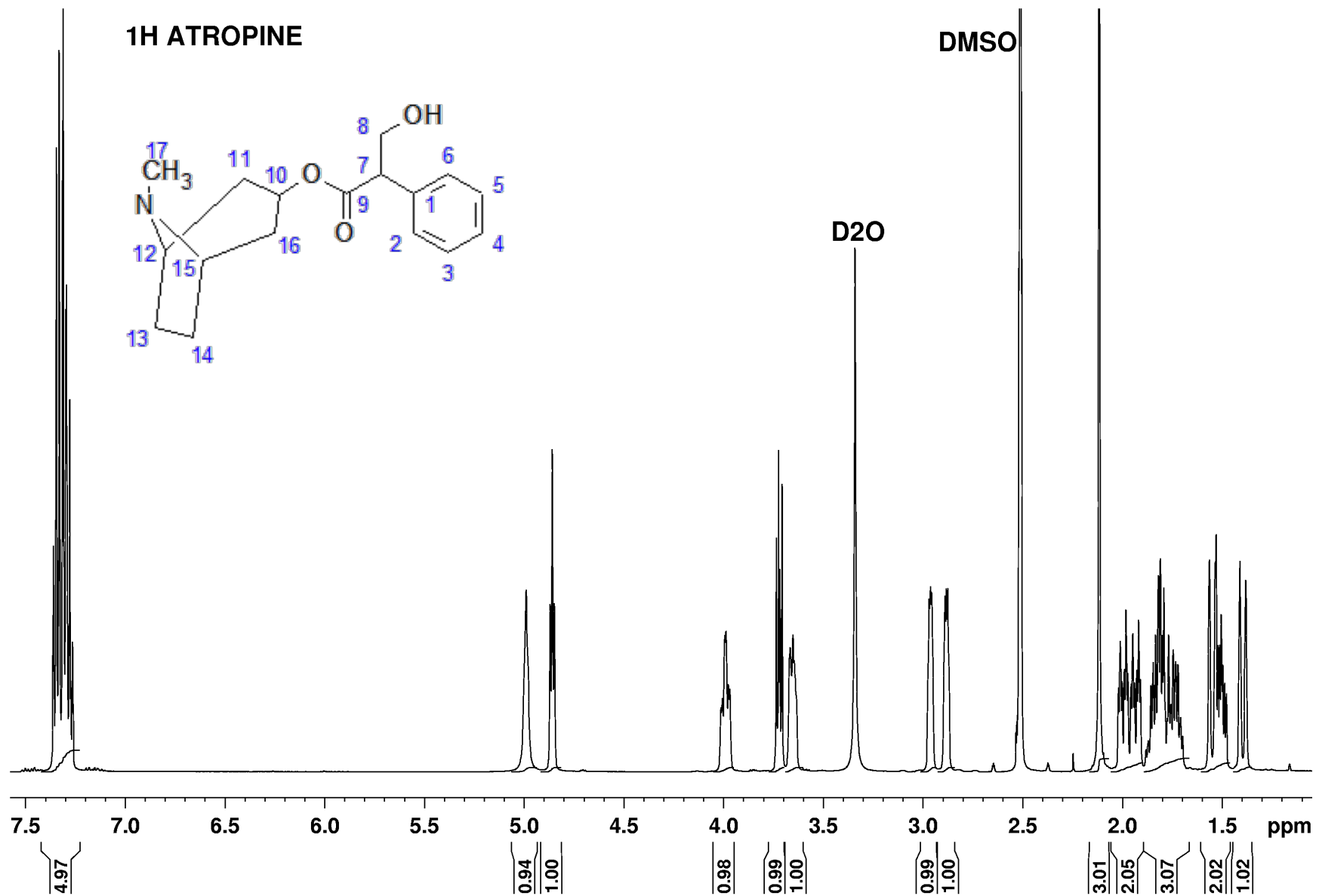


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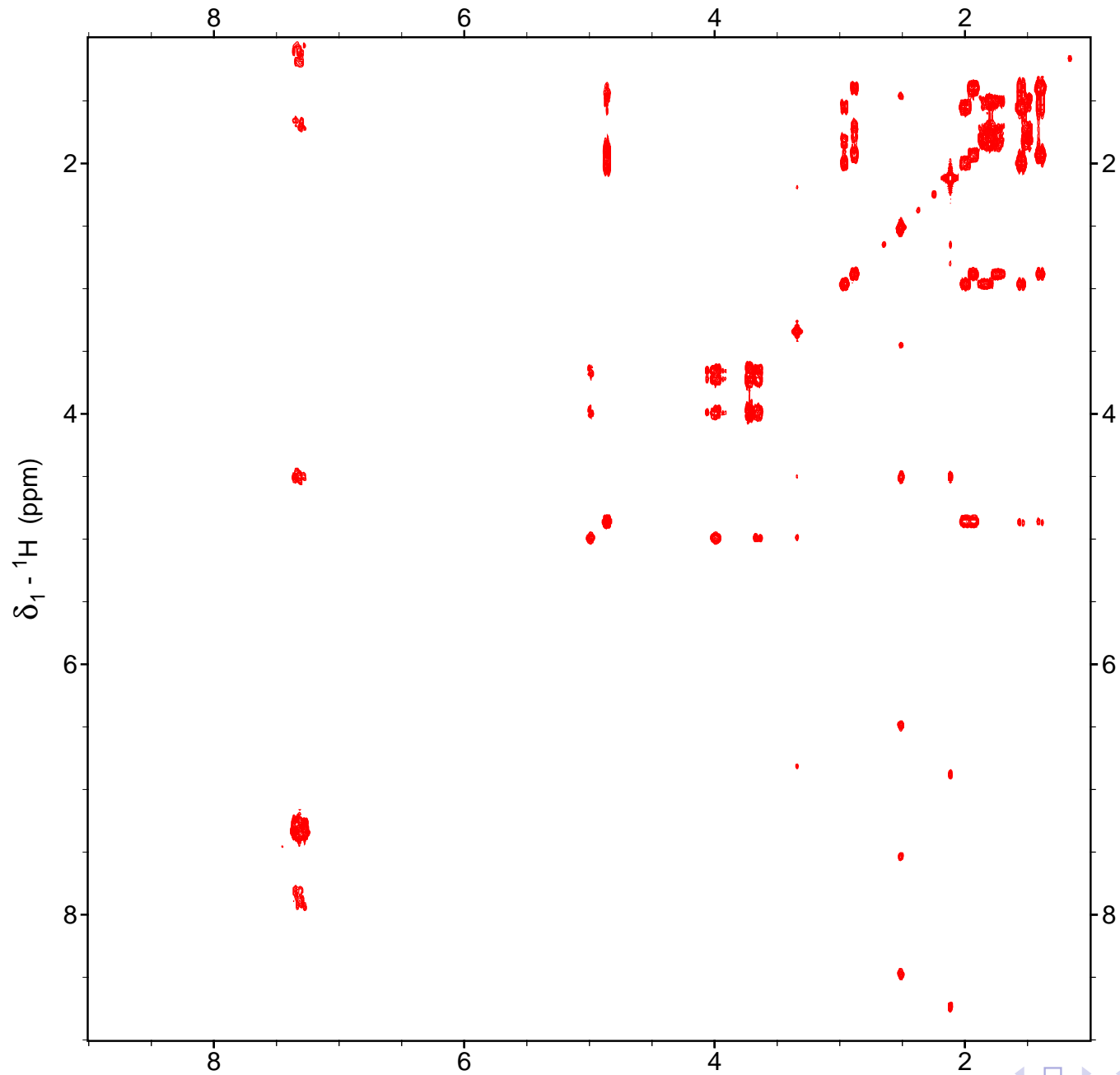
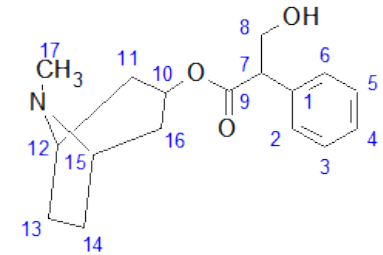
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March 27, 2019

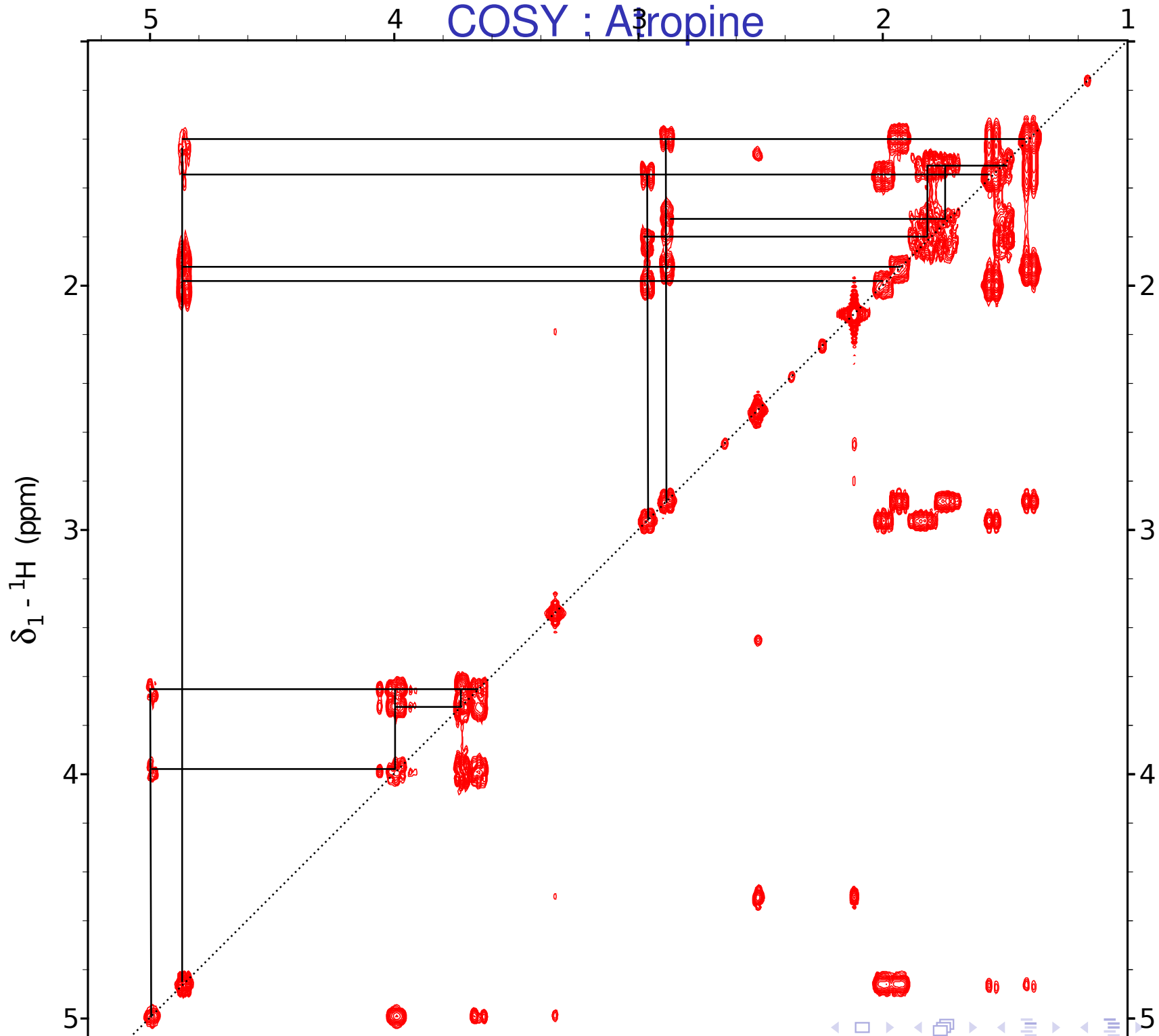
COSY : Atropine



COSY : Atropine



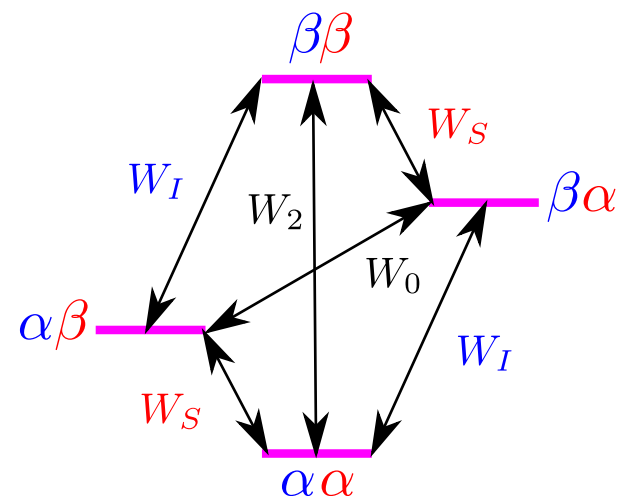
COSY : Atropine



NOESY - introduction

Nuclear Overhauser effect

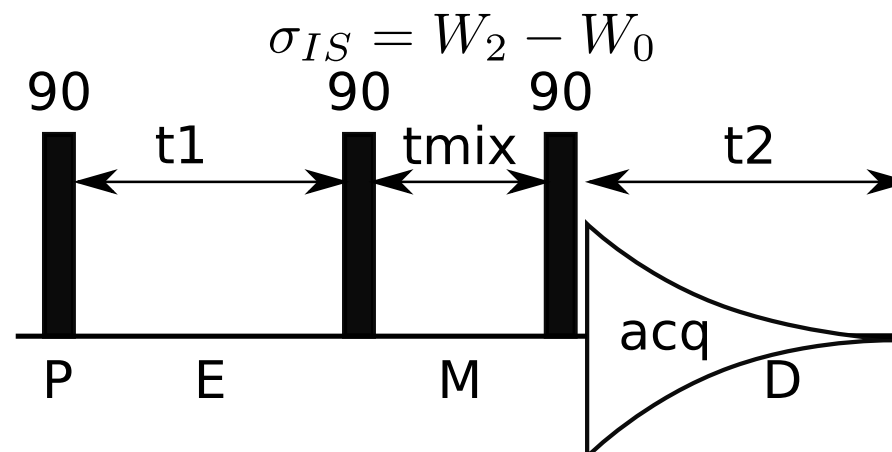
- ▶ dipol-dipol interaction
- ▶ magnetisation transfer TROUGH SPACE as a consequence of cross-relaxation



$$\frac{d\Delta I_z}{dt} = -\rho_I(I_z - I_z^0) - \sigma_{IS}(S_z - S_z^0)$$

NOESY

- ▶ correlates nuclei if their distance is **smaller than 5 Å**

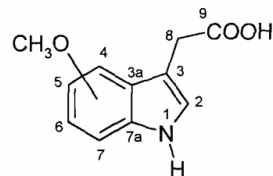


NOE differential experiment

PROBLEM 4

NOE- Difference Spectroscopy

Figure 4.1 shows the ^1H NMR and a ^1H NOE difference spectrum of a 3-indolylacetic acid derivative **13** bearing a methoxy group at the benzenoid ring.



What is the position of the methoxy group?

(400 MHz ^1H)

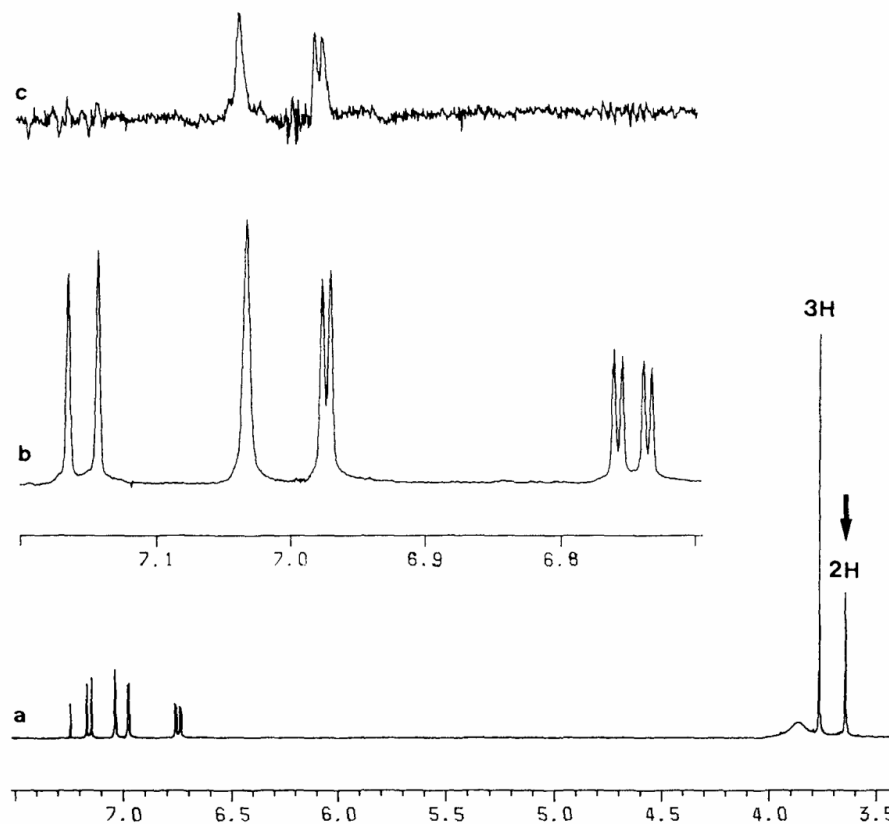
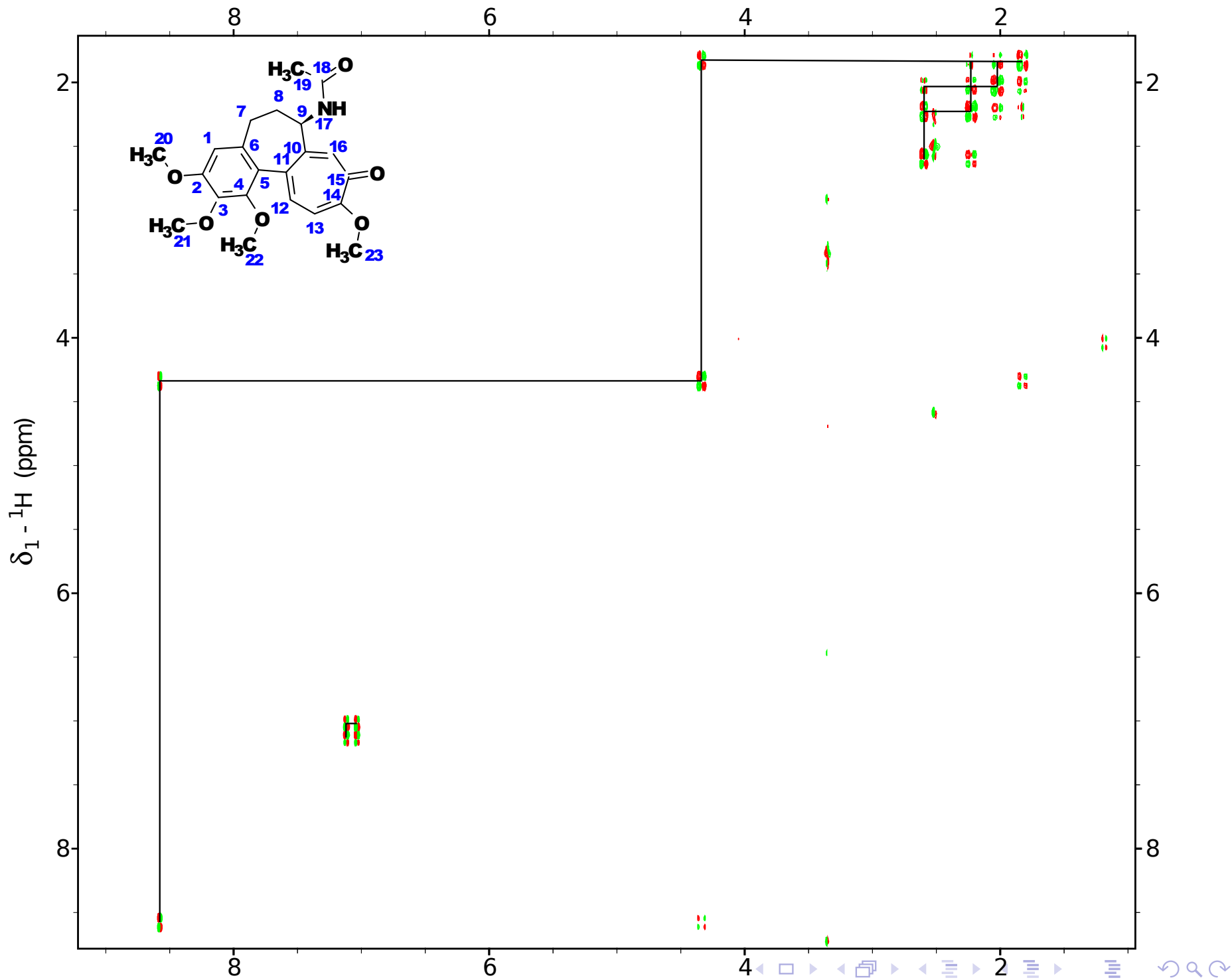
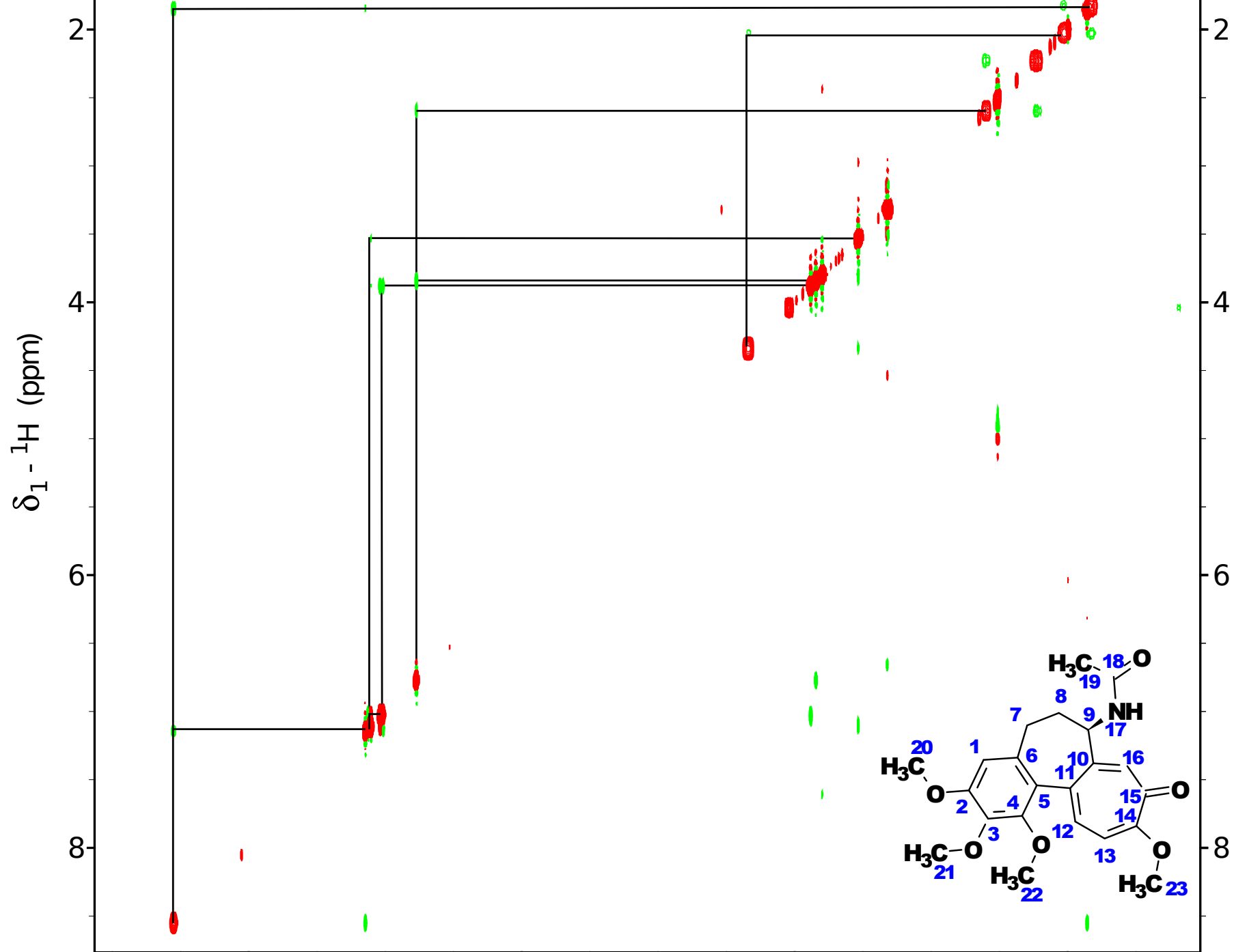


Fig. 4.1. 400 MHz ^1H NMR spectrum of **13** in a mixture of CDCl_3 and CD_3OD . **a** Full spectrum; **b** expanded section of the aromatic proton signals; **c** ^1H NOE difference spectrum, same section as in **b**, irradiation position at $\delta = 3.64$.

Colchicine - DQF-COSY



Colchicine - NOESY



Next session:

Midterm Test, Heteronuclear correlations