

Lactomycins A-C, Dephosphorylated Phoslactomycin Derivatives that Inhibit Cathepsin B, from the Marine-derived *Streptomyces* sp. ACT232

Yi Sun,^{1,†} Rogie Royce Carandang,¹ Yuta Harada,¹ Shigeru Okada,¹ Kazutoshi Yoshitake,² Shuichi Asakawa,² Yuichi Nogi,³ Shigeki Matsunaga,^{1,*} Kentaro Takada^{1,*}

¹ Laboratory of Aquatic Natural Products Chemistry, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Tokyo 113-8657, Japan

² Laboratory of Aquatic Molecular Biology and Biotechnology, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Tokyo 113-8657, Japan

³ Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Natsushima, Yokosuka, Kanagawa 237-0061, Japan

Supplementary materials

- Figure S1. ¹H NMR spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S2. ¹³C NMR spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S3. COSY spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S4. TOCSY spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S5. HSQC spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S6. HMBC spectrum of lactomycin A (**1**) in DMSO-*d*₆.
- Figure S7. ¹H NMR spectrum of lactomycin B (**2**) in CD₃OD.
- Figure S8. ¹³C NMR spectrum of lactomycin B (**2**) in CD₃OD.
- Figure S9. COSY spectrum of lactomycin B (**2**) in CD₃OD.
- Figure S10. HSQC spectrum of lactomycin B (**2**) in CD₃OD.
- Figure S11. HMBC spectrum of lactomycin B (**2**) in CD₃OD.
- Figure S12. ¹H NMR spectrum of lactomycin C (**3**) in CD₃OD.
- Figure S13. ¹³C NMR spectrum of lactomycin C (**3**) in CD₃OD.
- Figure S14. COSY spectrum of lactomycin C (**3**) in CD₃OD.
- Figure S15. HSQC spectrum of lactomycin C (**3**) in CD₃OD.
- Figure S16. HMBC spectrum of lactomycin C (**3**) in CD₃OD.

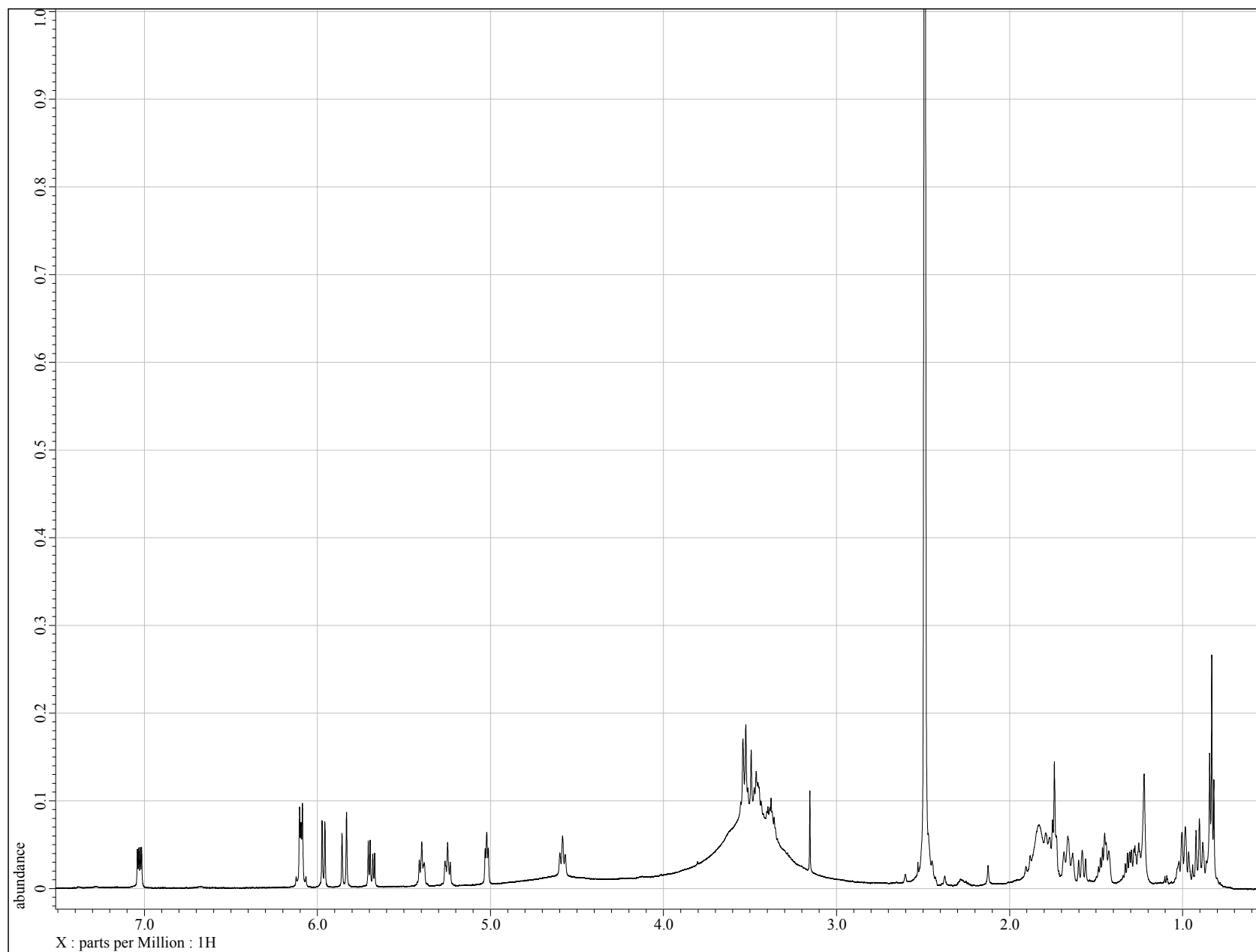


Figure S1. ^1H NMR spectrum of lactomycin A (**1**) in $\text{DMSO}-d_6$.

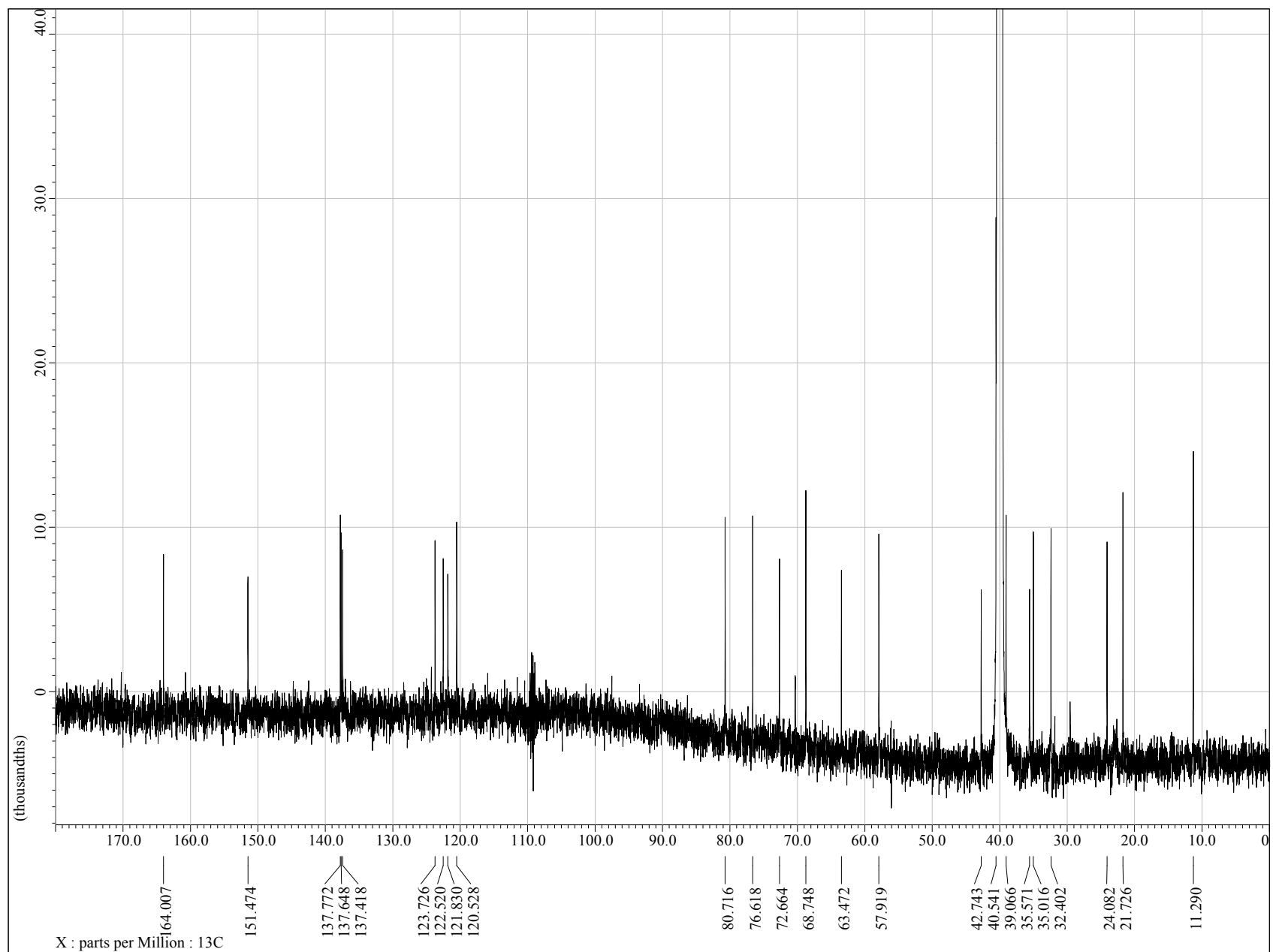


Figure S2. ^{13}C NMR spectrum of lactomycin A (**1**) in $\text{DMSO}-d_6$.

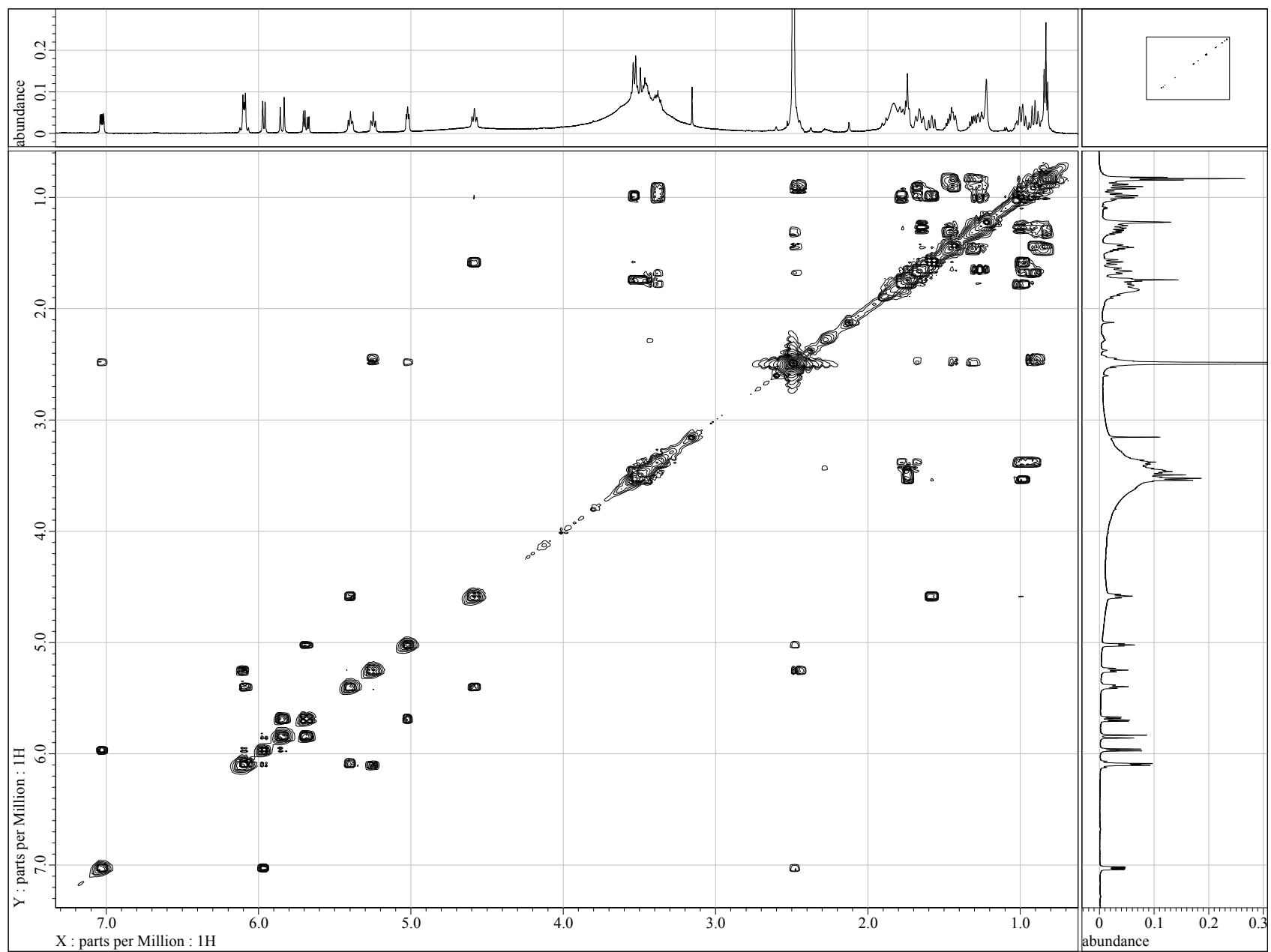


Figure S3. COSY spectrum of lactomycin A (**1**) in DMSO- d_6 .

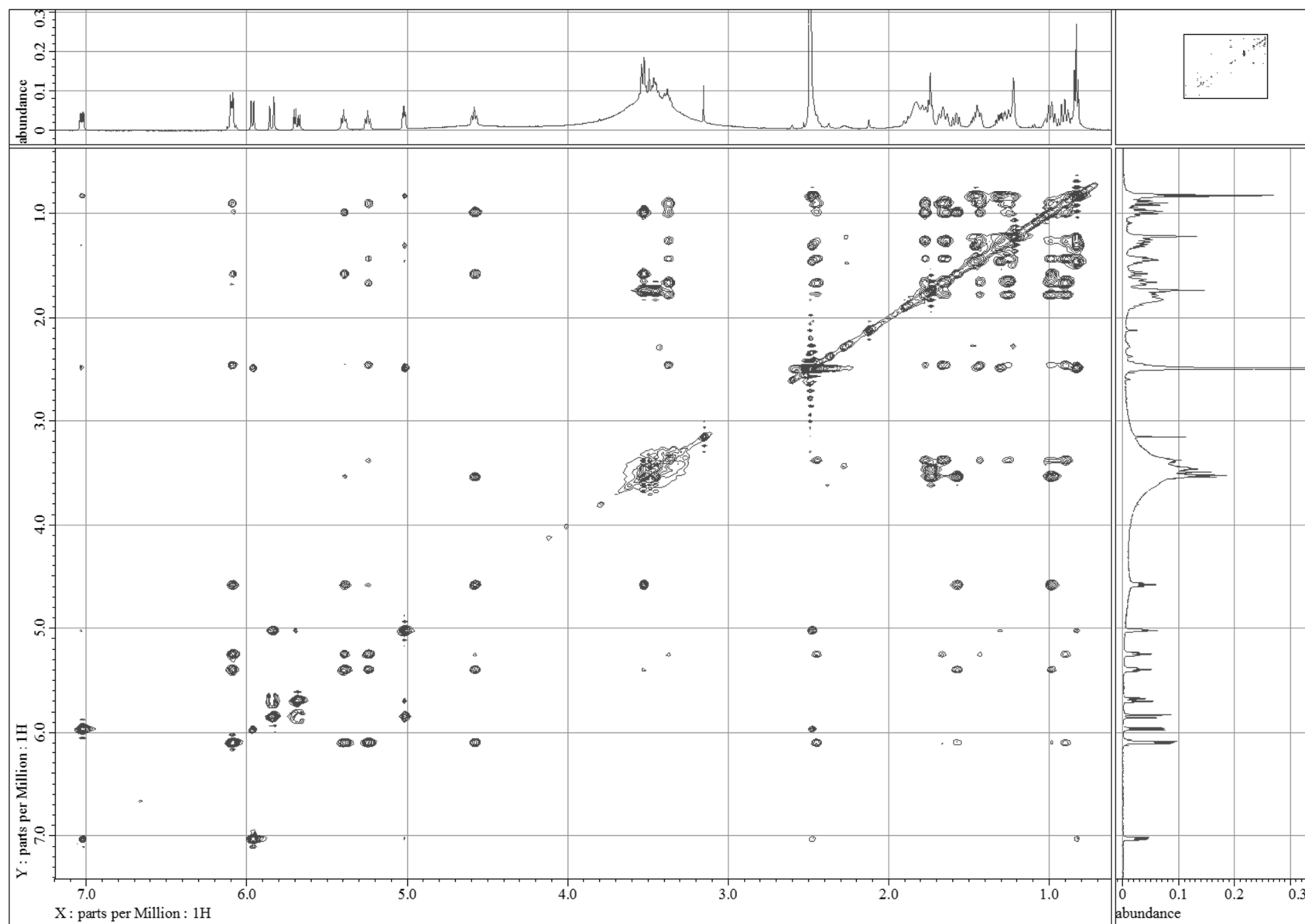


Figure S4. TOCSY spectrum of lactomycin A (**1**) in DMSO- d_6 .

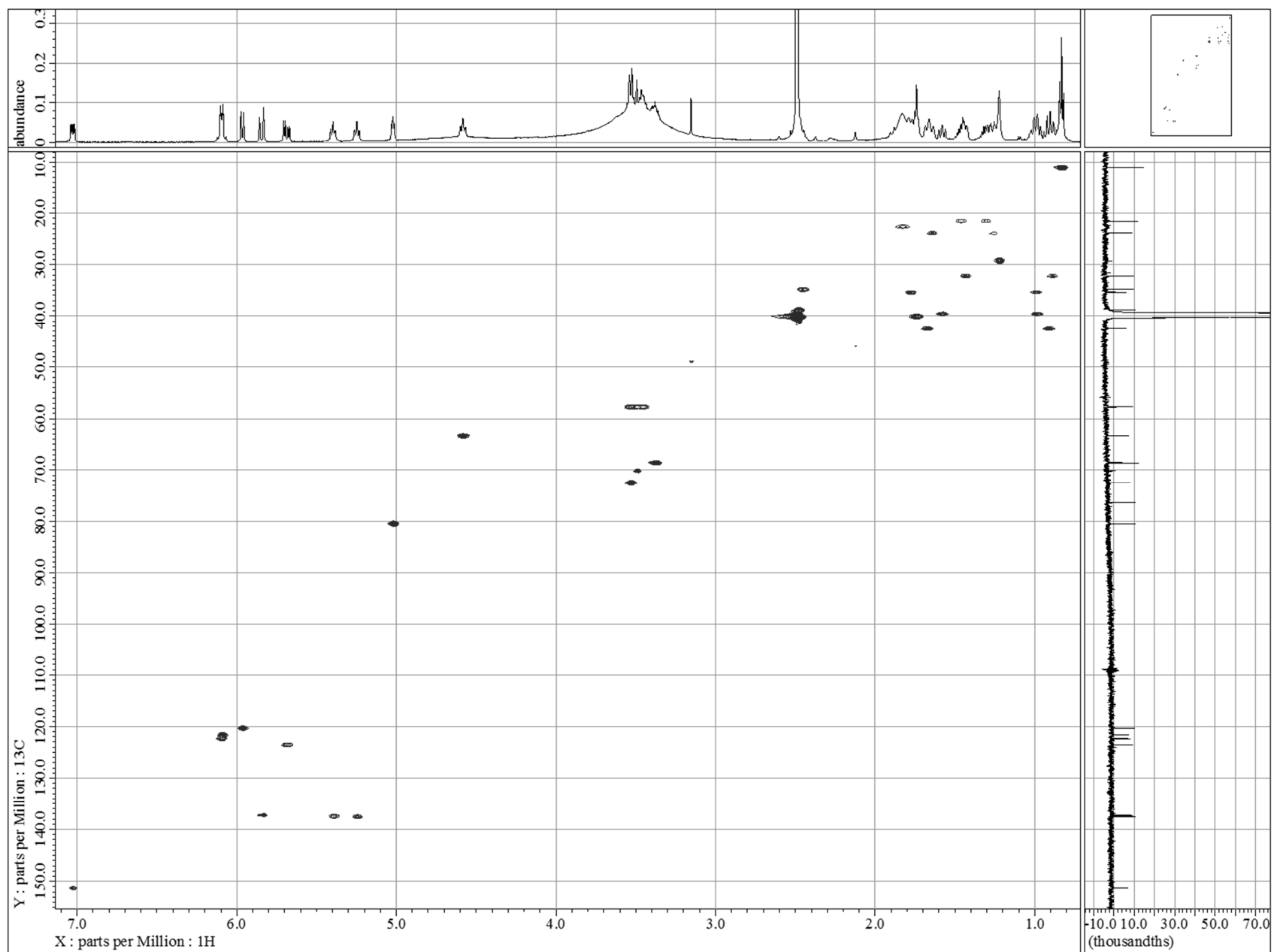


Figure S5. HSQC spectrum of lactomycin A (**1**) in DMSO- d_6

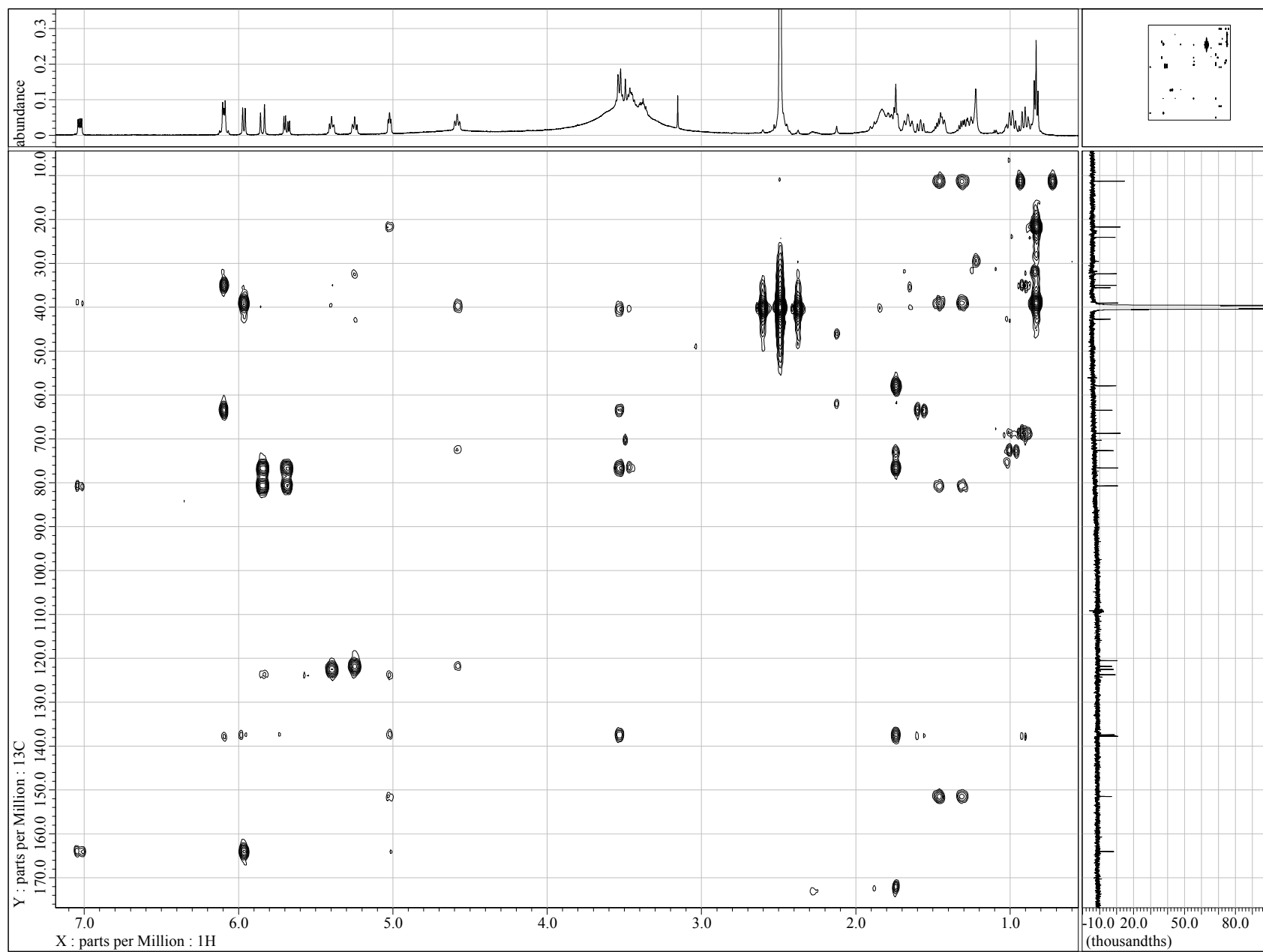


Figure S6. HMBC spectrum of lactomycin A (**1**) in DMSO-*d*₆

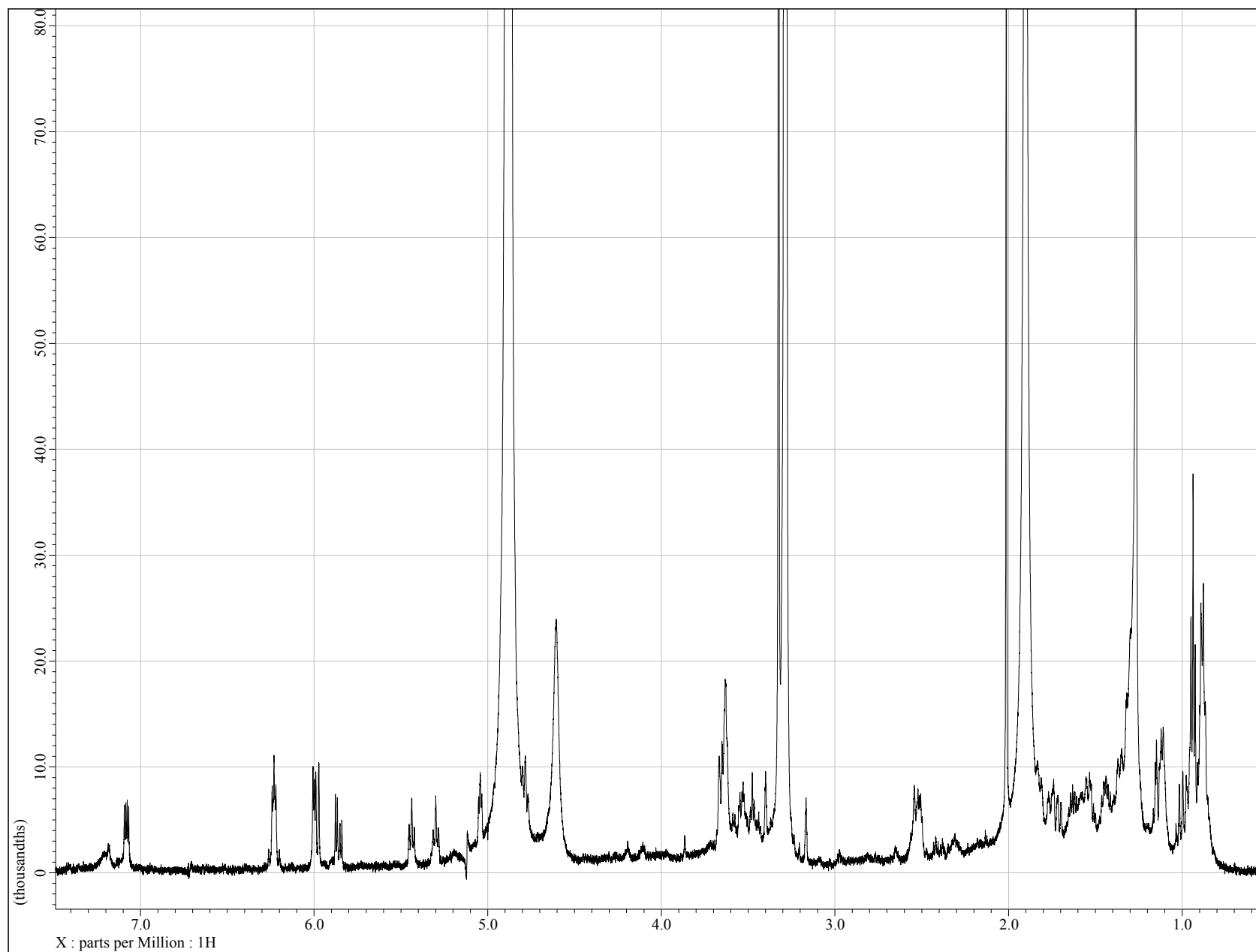


Figure S7. ^1H NMR spectrum of lactomycin B (**2**) in CD_3OD .

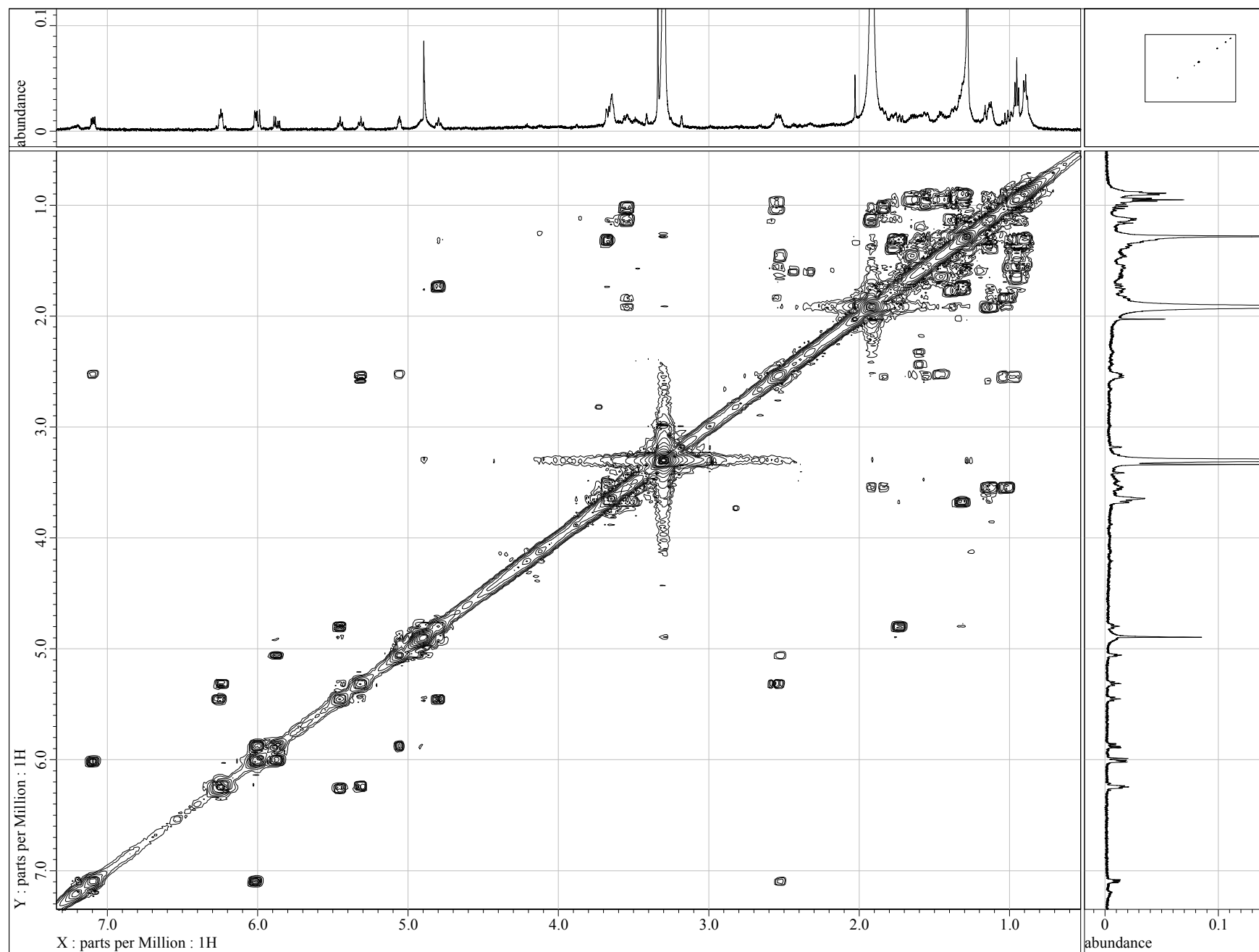


Figure S8. COSY spectrum of lactomycin B (**2**) in CD₃OD.

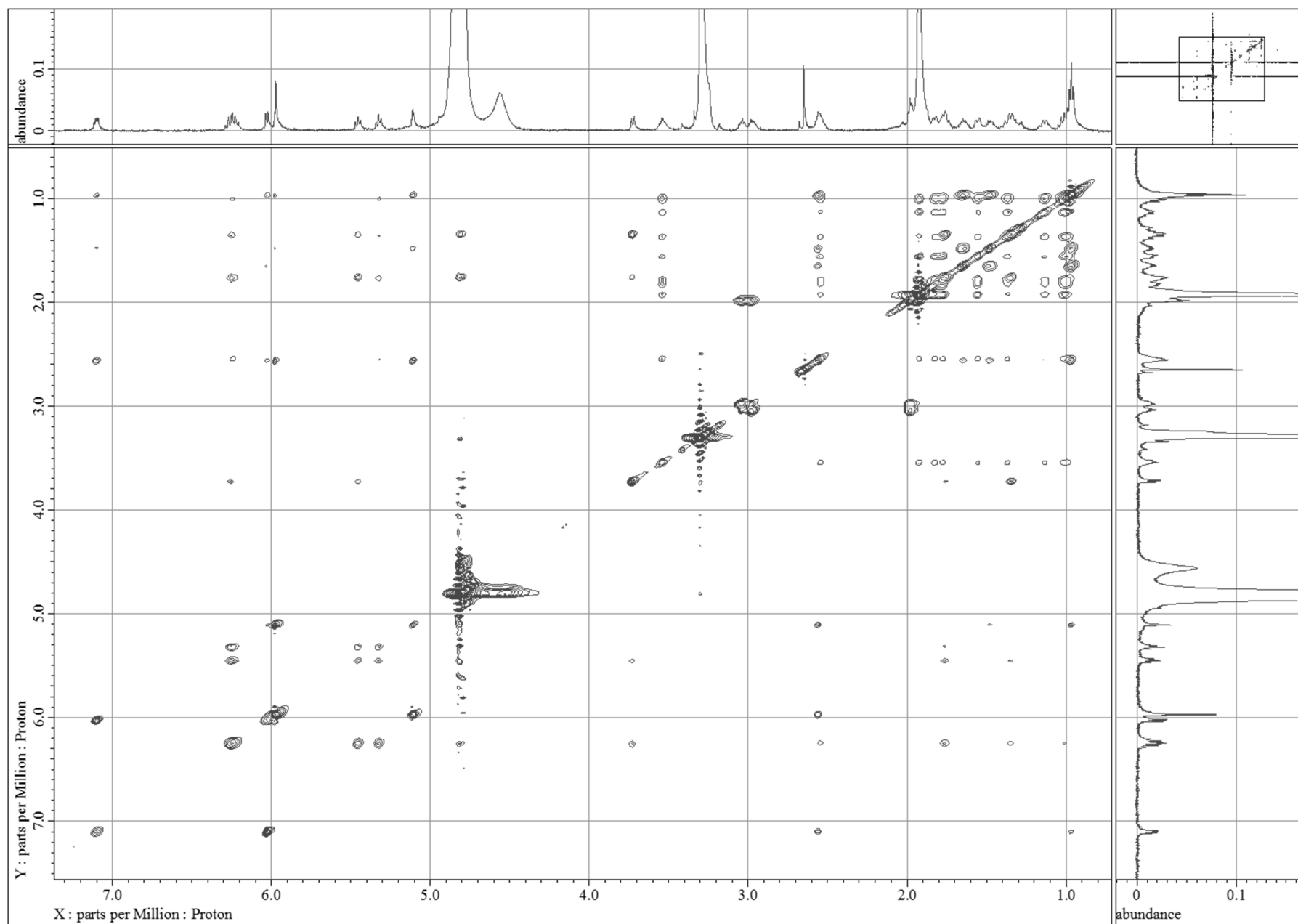


Figure S9. TOCSY spectrum of lactomycin B (**2**) in CD₃OD.

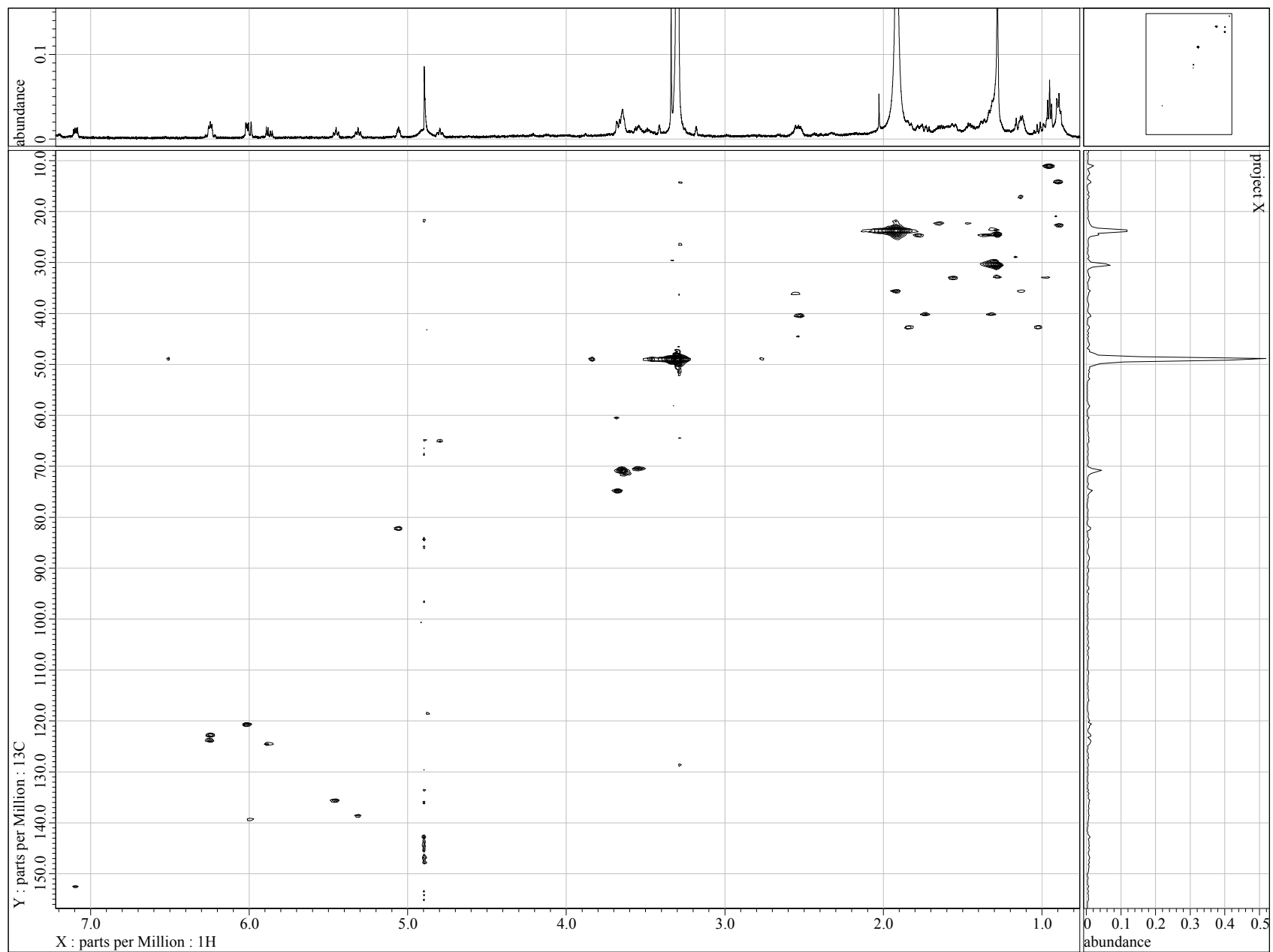


Figure S10. HSQC spectrum of lactomycin B (**2**) in CD₃OD.

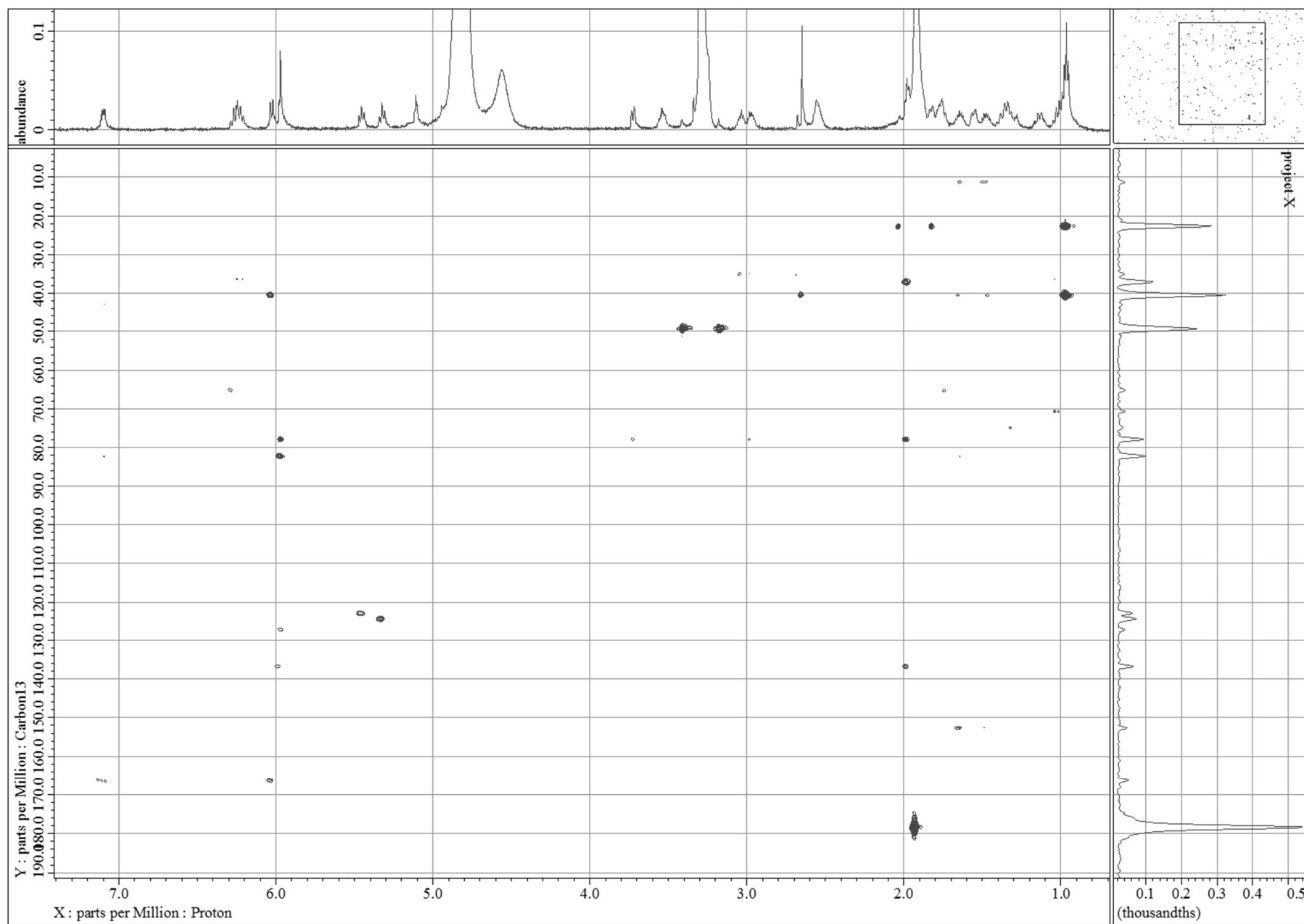


Figure S11. HMBC spectrum of lactomycin B (2) in CD₃OD.

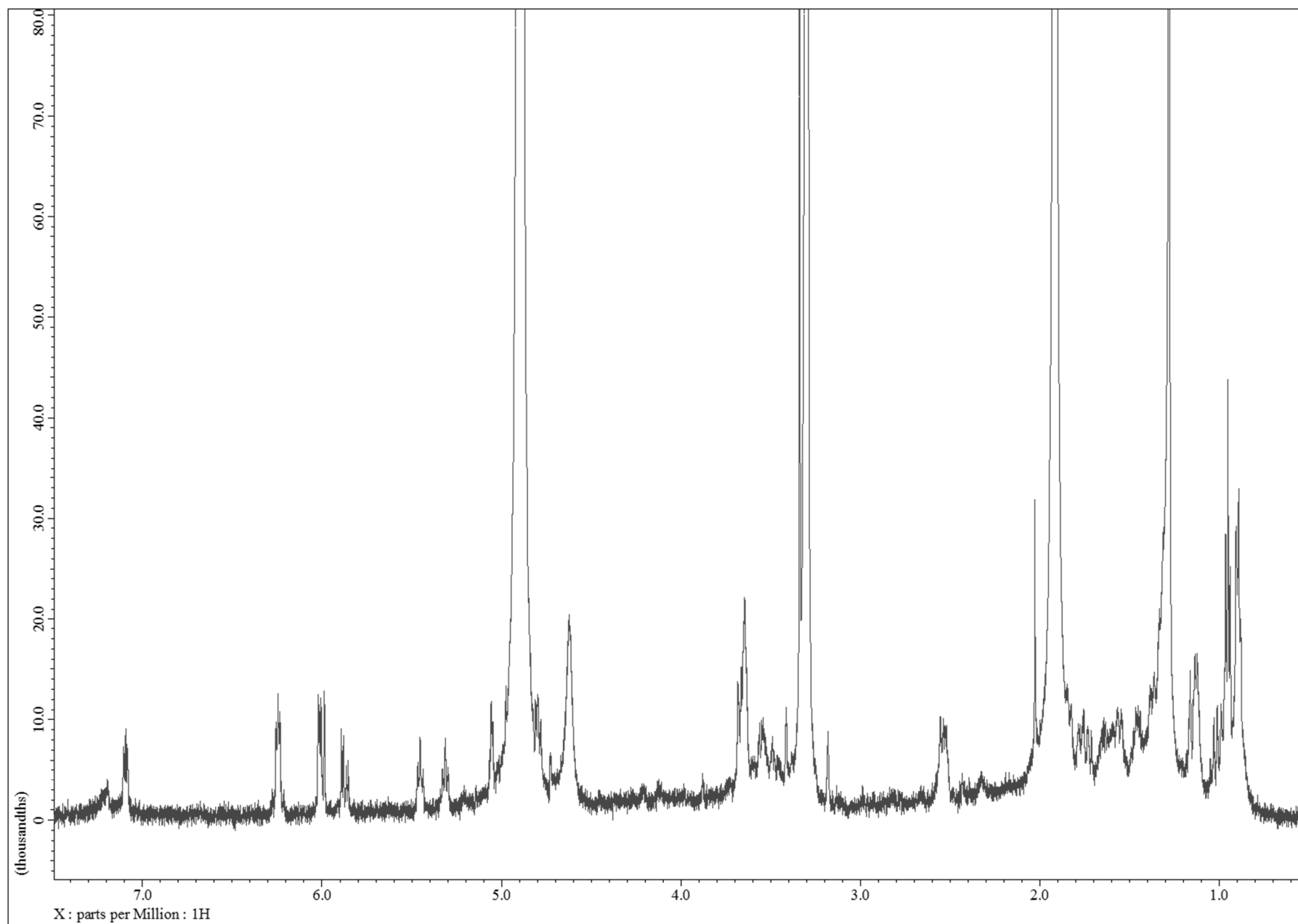


Figure S12. ^1H NMR spectrum of lactomycin C (**3**) in CD_3OD .

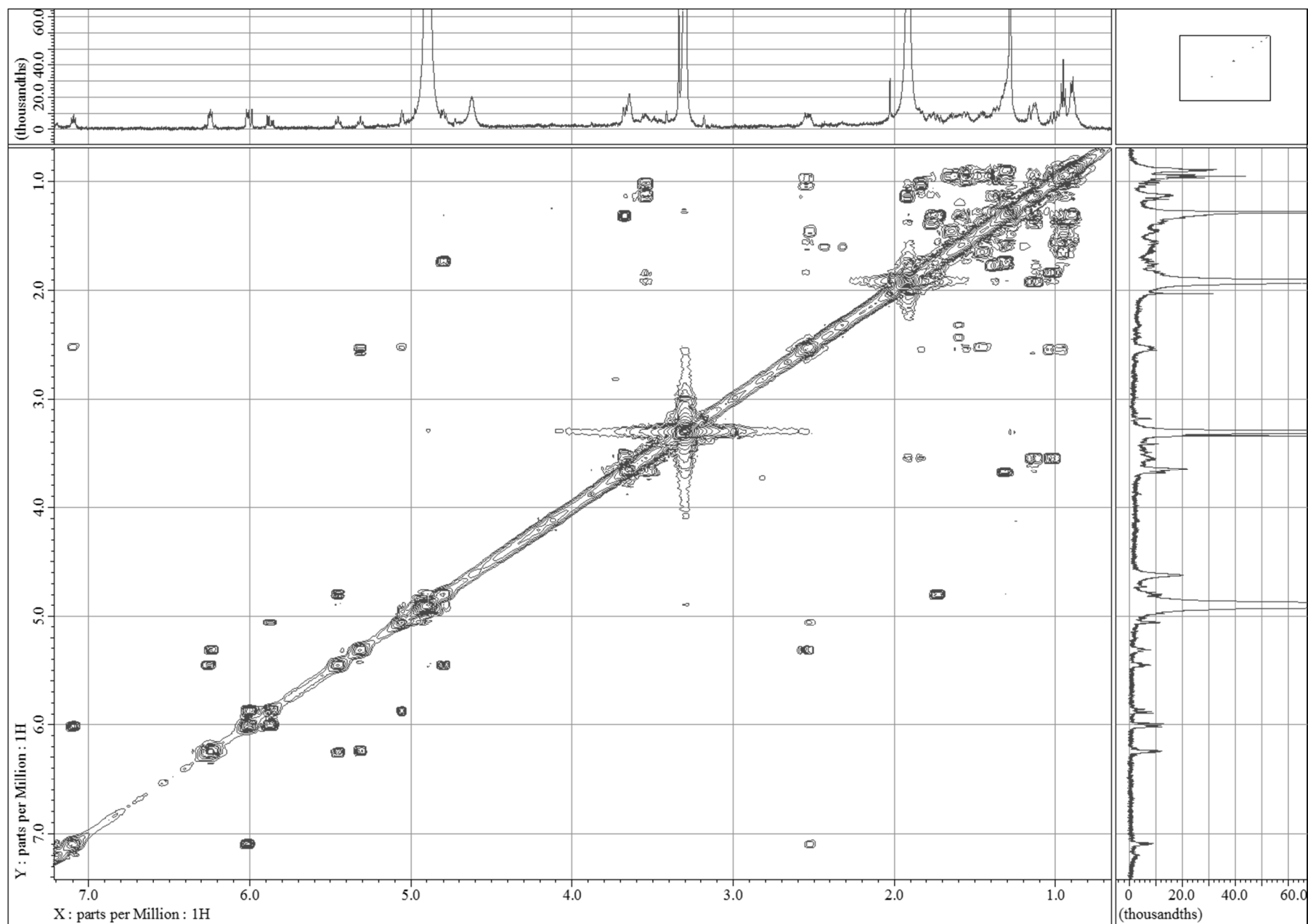


Figure S13. COSY spectrum of lactomycin C (**3**) in CD₃OD.

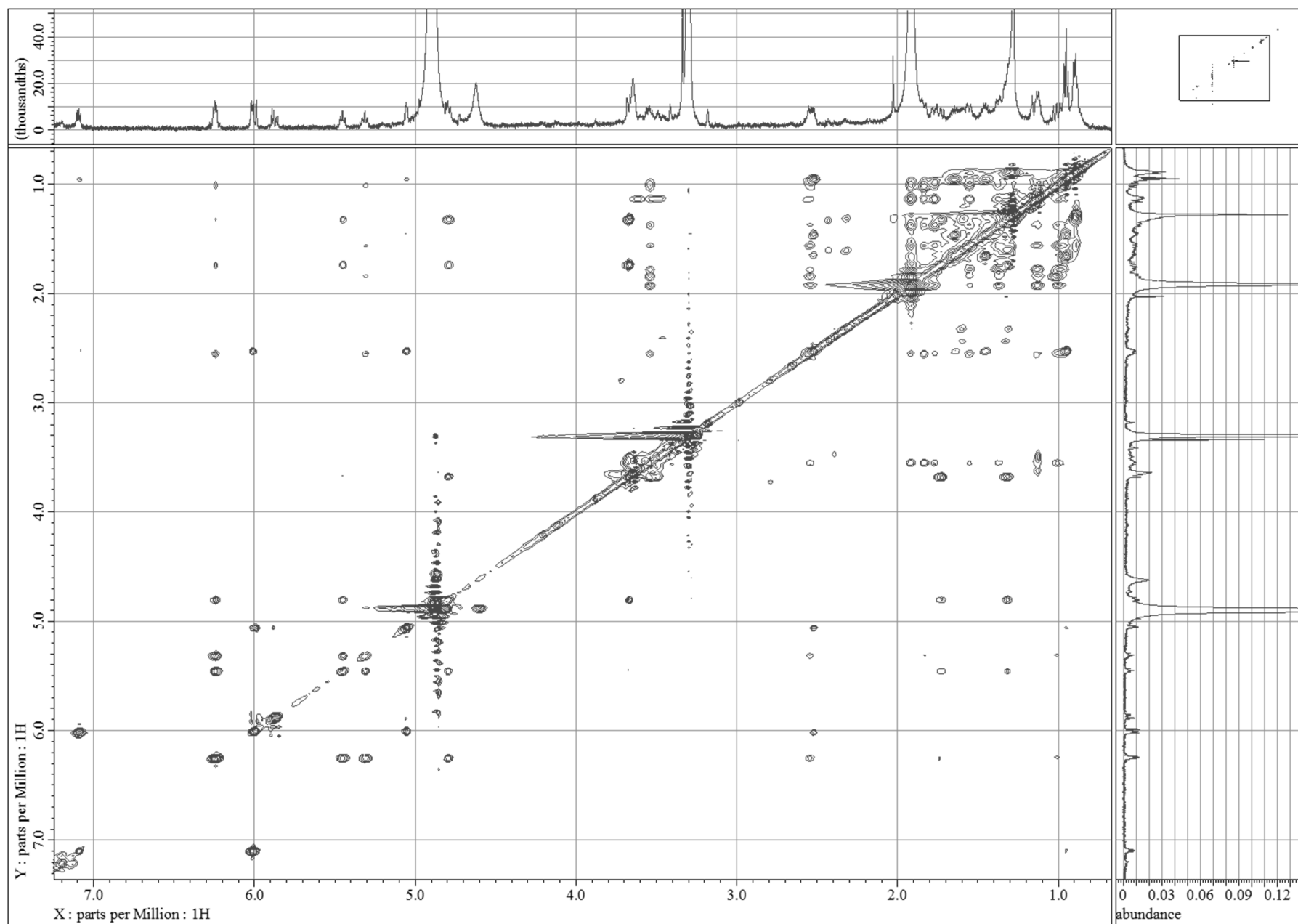


Figure S14. TOCSY spectrum of lactomycin C (**3**) in CD₃OD.

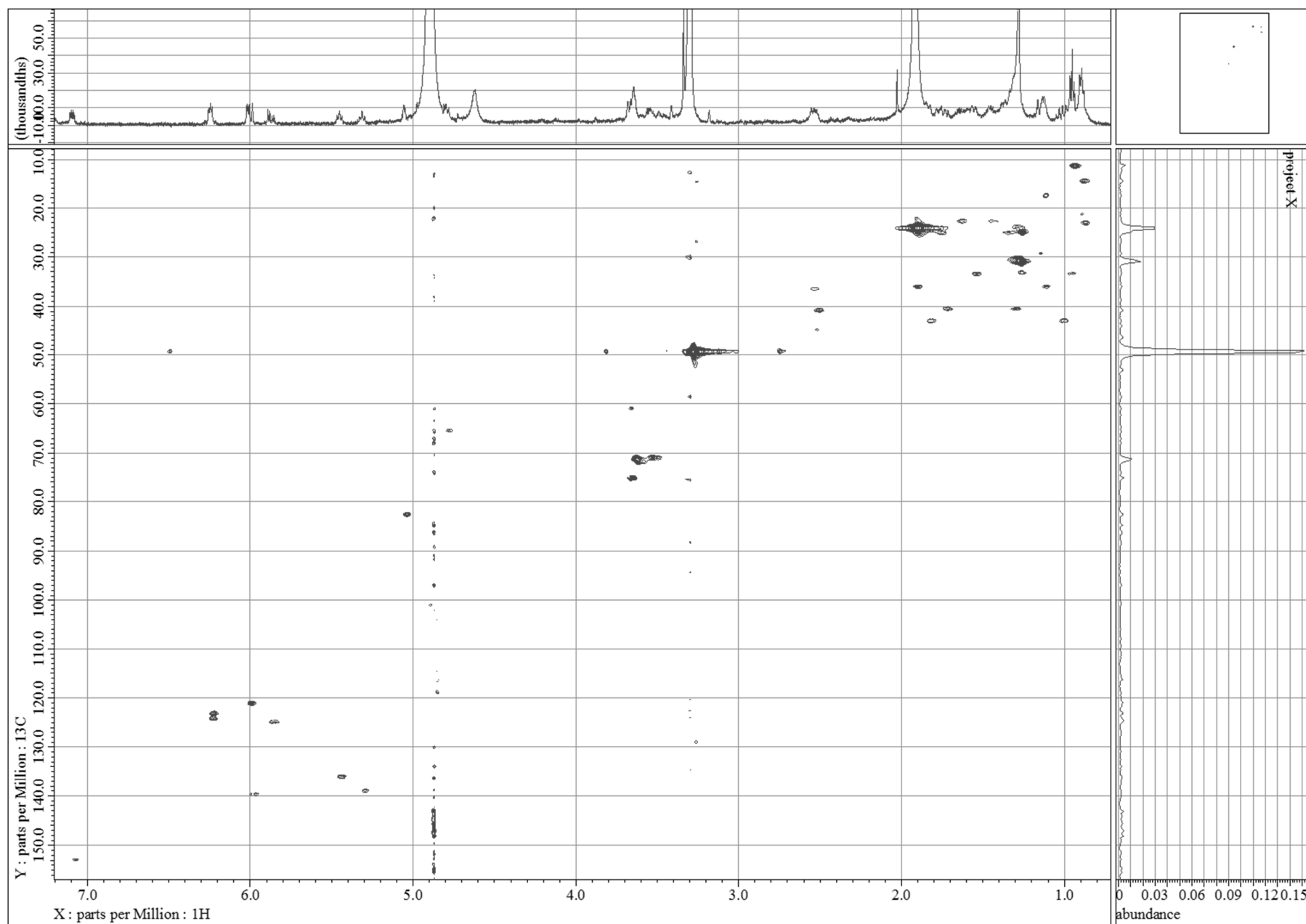


Figure S15. HSQC spectrum of lactomycin C (**3**) in CD₃OD.

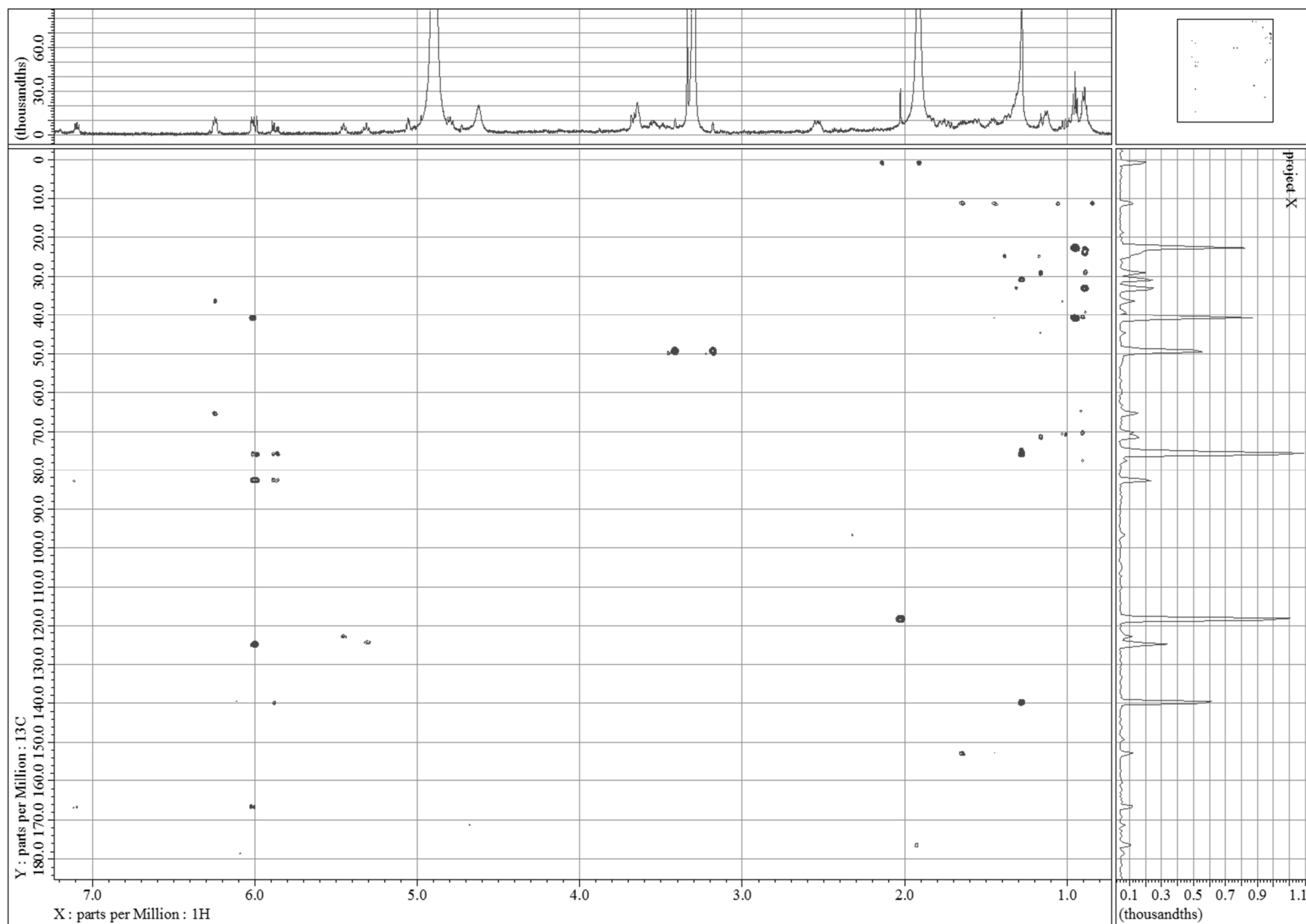


Figure S16. HMBC spectrum of lactomycin C (**3**) in CD_3OD .