



Supplementary

First report of piperidone extracts as tyrosinase and α -glucosidase inhibitors from fruits of *Piper retrofractum*

Thita Yodsawad^{a,b,†}, Titiruetai Doungwichitrkul^{a,†}, Thitipan Meemongkolkiat^{c,†}, Chanpen Chanchao^{c,†}, Thanakorn Damsud^{d,†}, Preecha Phuwapraisirisan^{a,†,*}

^a Center of Excellence in Natural Product, Department of Chemistry, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand

^b Faculty of Science and Technology, Rajamangala University of Technology Rattanakosin, Nakhon Pathom 73170, Thailand

^c Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand

^d Faculty of Science and Technology, Rajamangala University of Technology Srivijaya Nakhon Si Thammarat Saiyai Campus, Nakhon Si Thammarat 80110, Thailand

Supplementary Figures

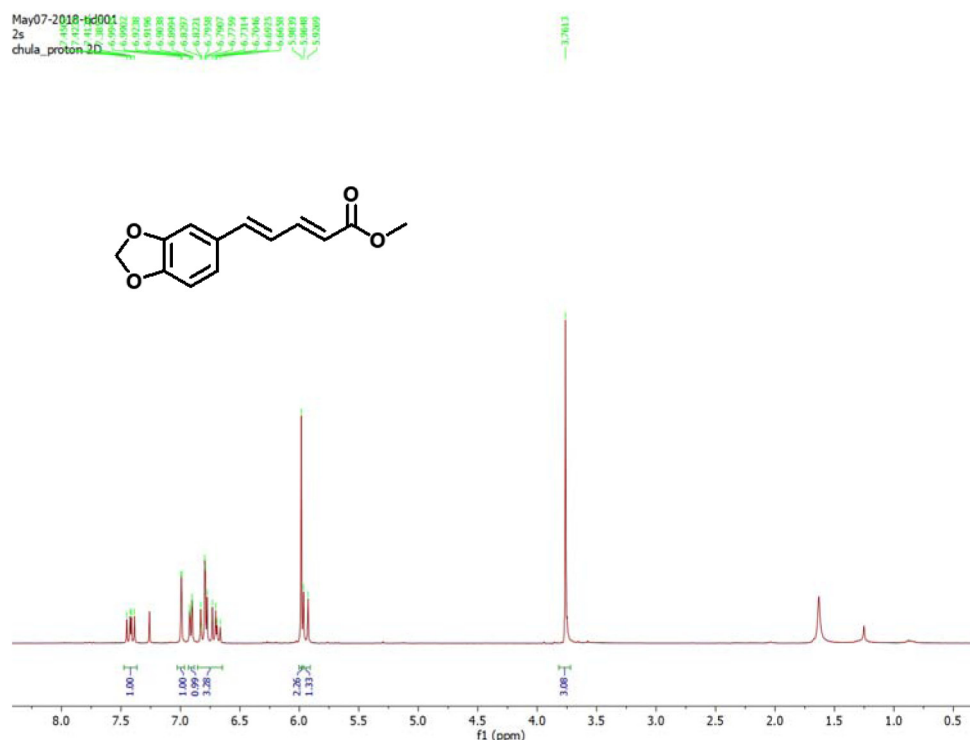


Fig. S1 Proton nuclear magnetic resonance (400 MHz) (CDCl_3) spectrum of compound 1

[†] Equal contribution.

* Corresponding author.

E-mail address: preecha.p@chula.ac.th (P. Phuwapraisirisan)

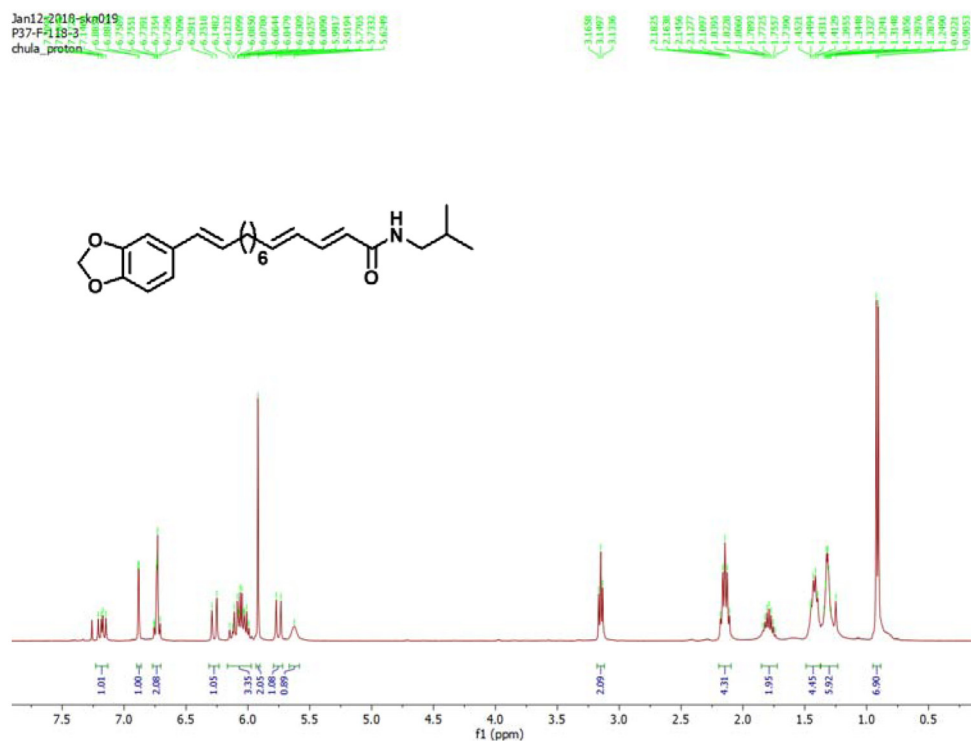
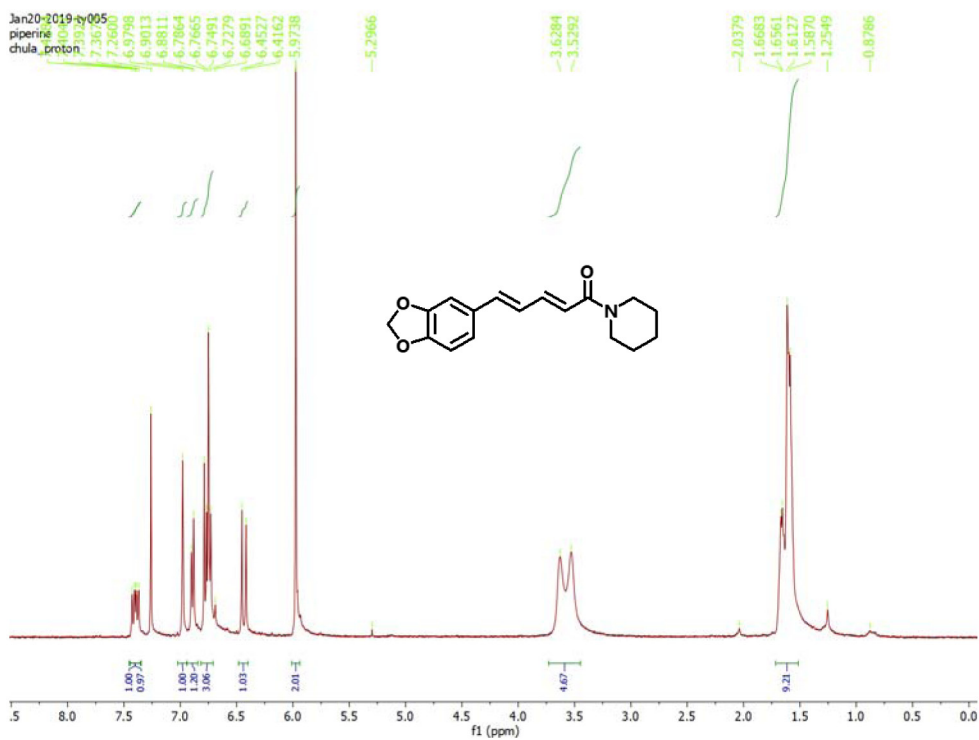


Fig. S2 Proton nuclear magnetic resonance (400 MHz) (CDCl_3) spectrum of compound 2



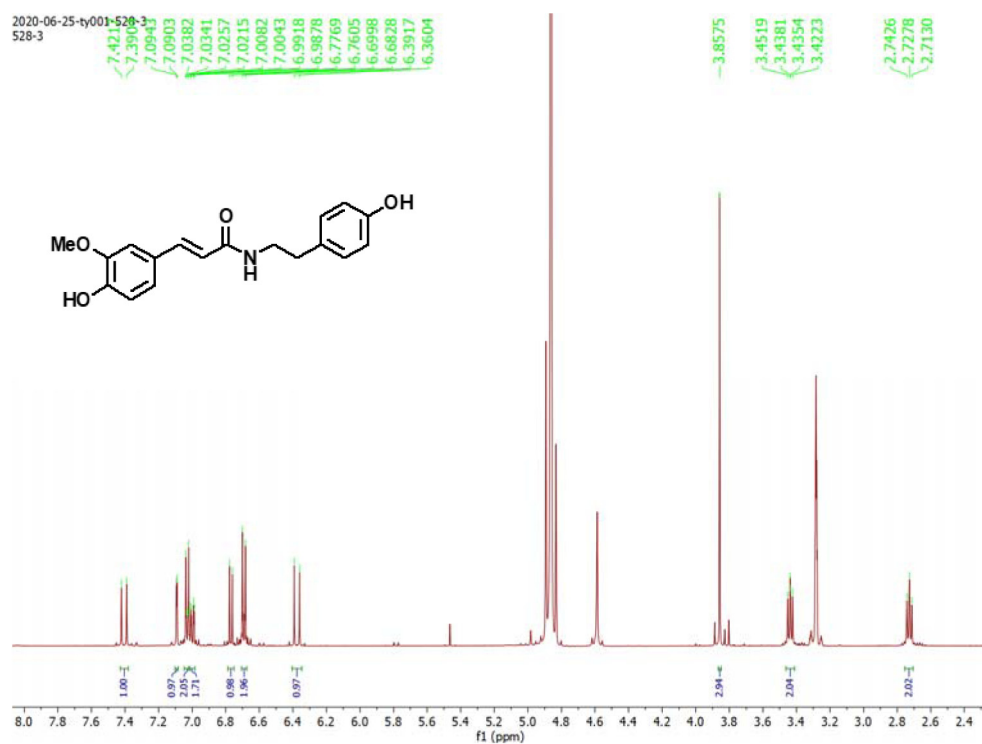


Fig. S4 Proton nuclear magnetic resonance (400 MHz) (methanol- d_4) spectrum of compound 4

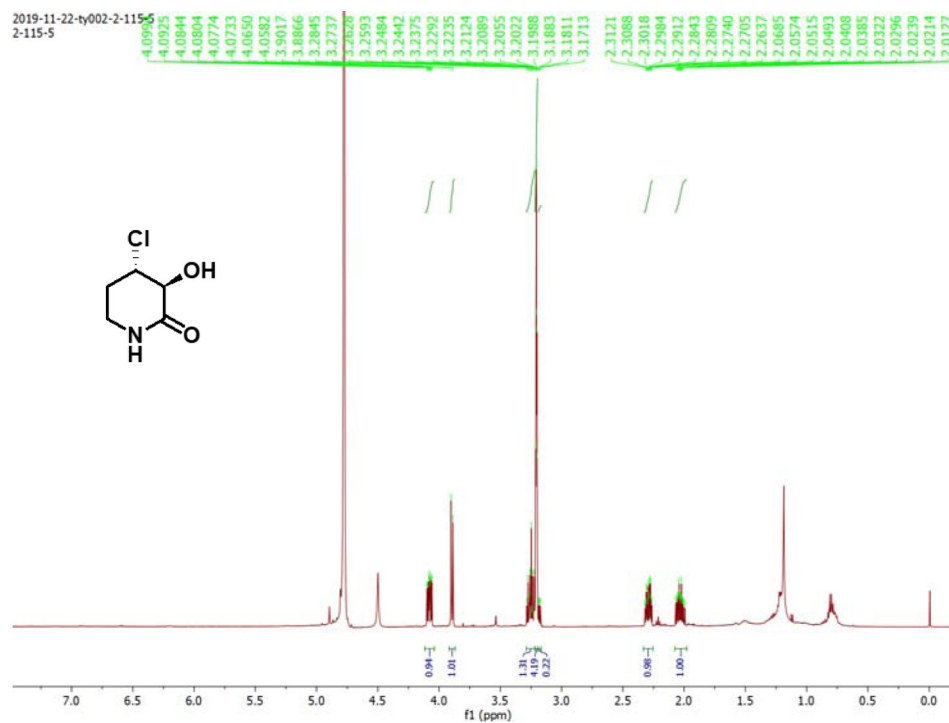


Fig. S5 Proton nuclear magnetic resonance (500 MHz) (methanol- d_4) spectrum of compound 5

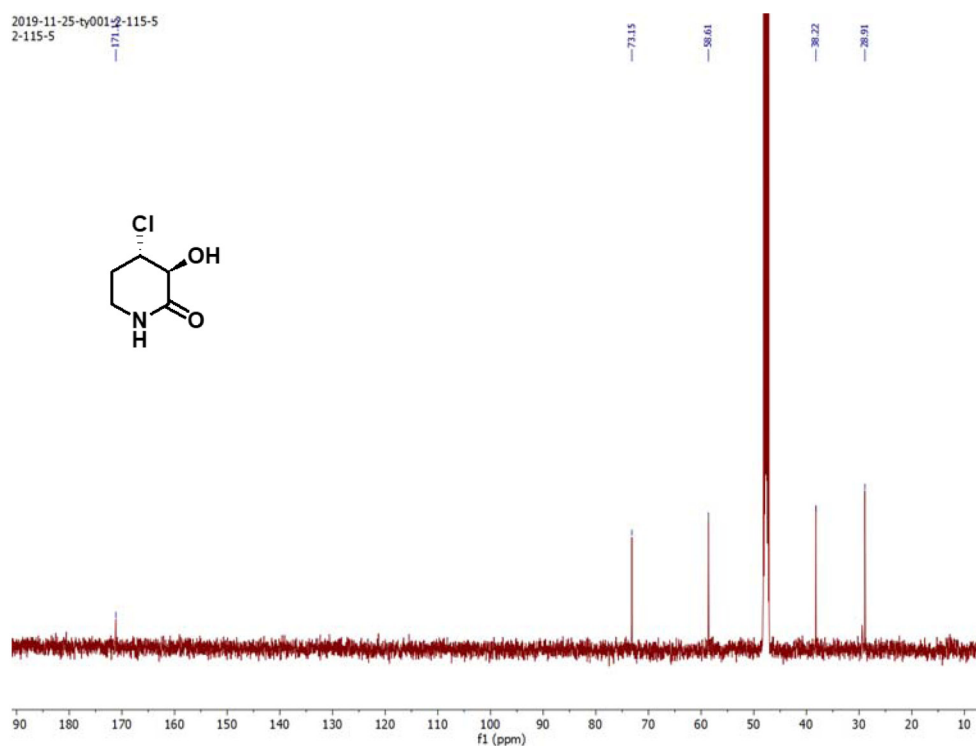


Fig. S6 Carbon-13 nuclear magnetic resonance (125 MHz) (methanol- d_4) spectrum of compound 5

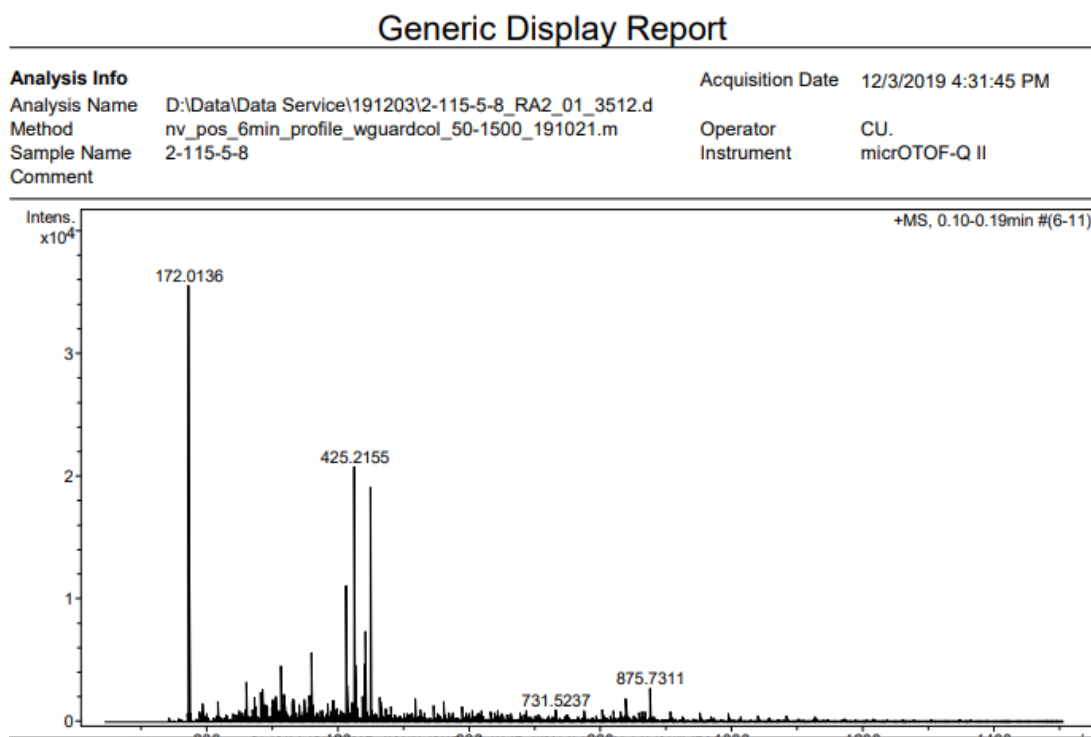


Fig. S7 Mass spectrum of compound 5

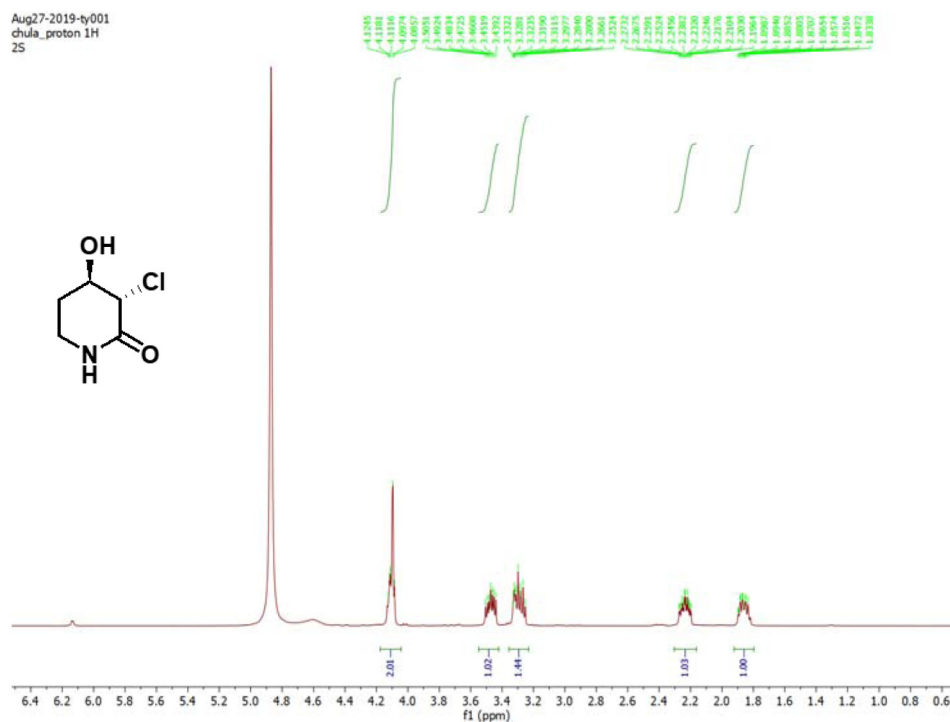


Fig. S8 Proton nuclear magnetic resonance (400 MHz) (methanol-*d*₄) spectrum of compound 6

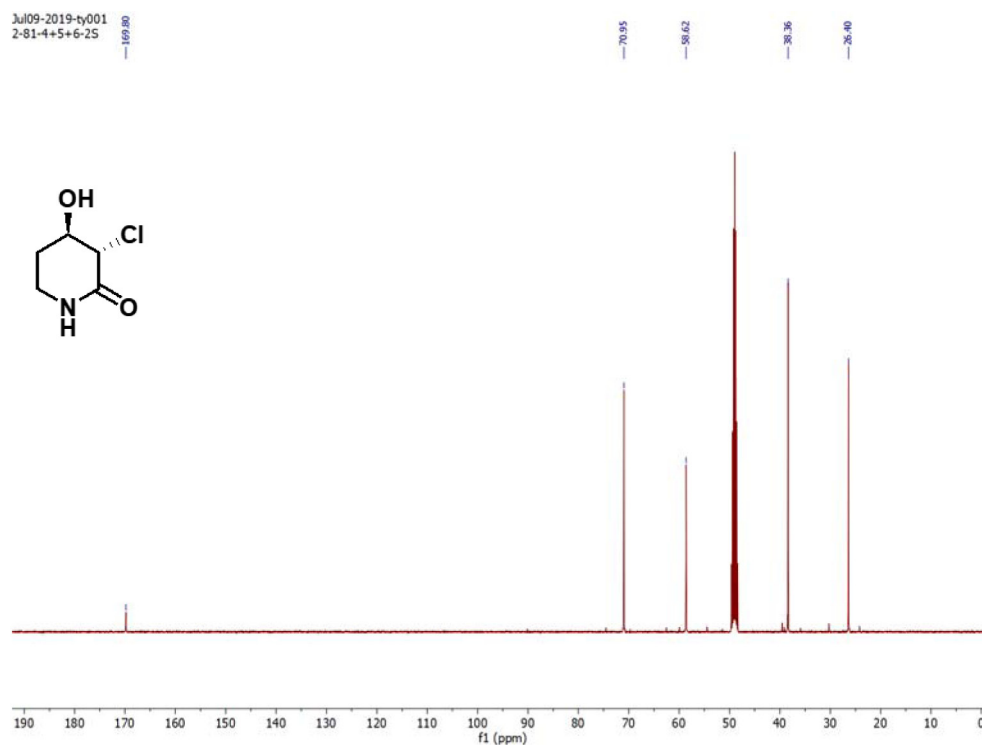


Fig. S9 Carbon-13 nuclear magnetic resonance (100 MHz) (methanol- d_4) spectrum of compound 6

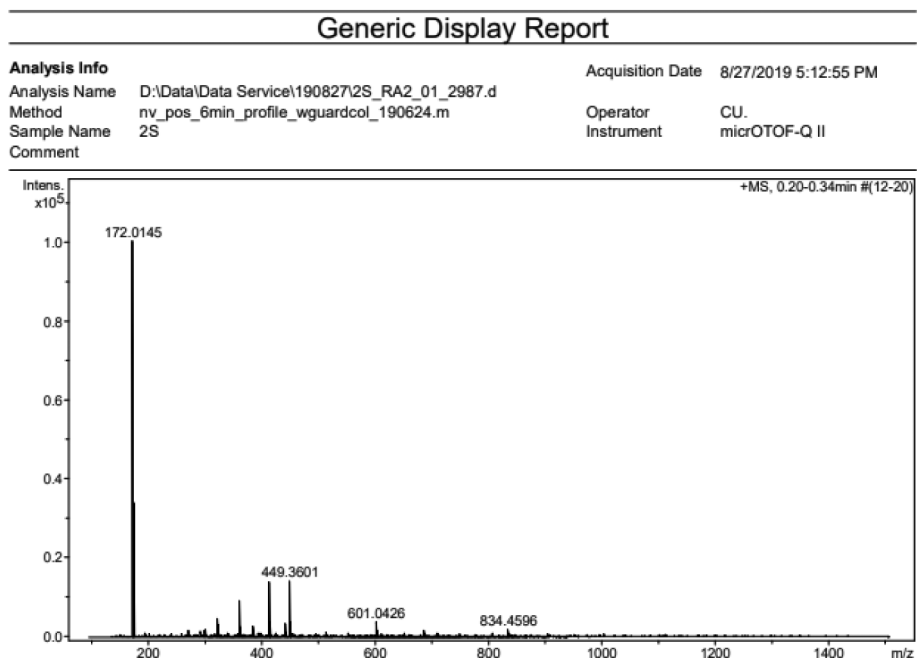


Fig. S10 Mass spectrum of compound 6

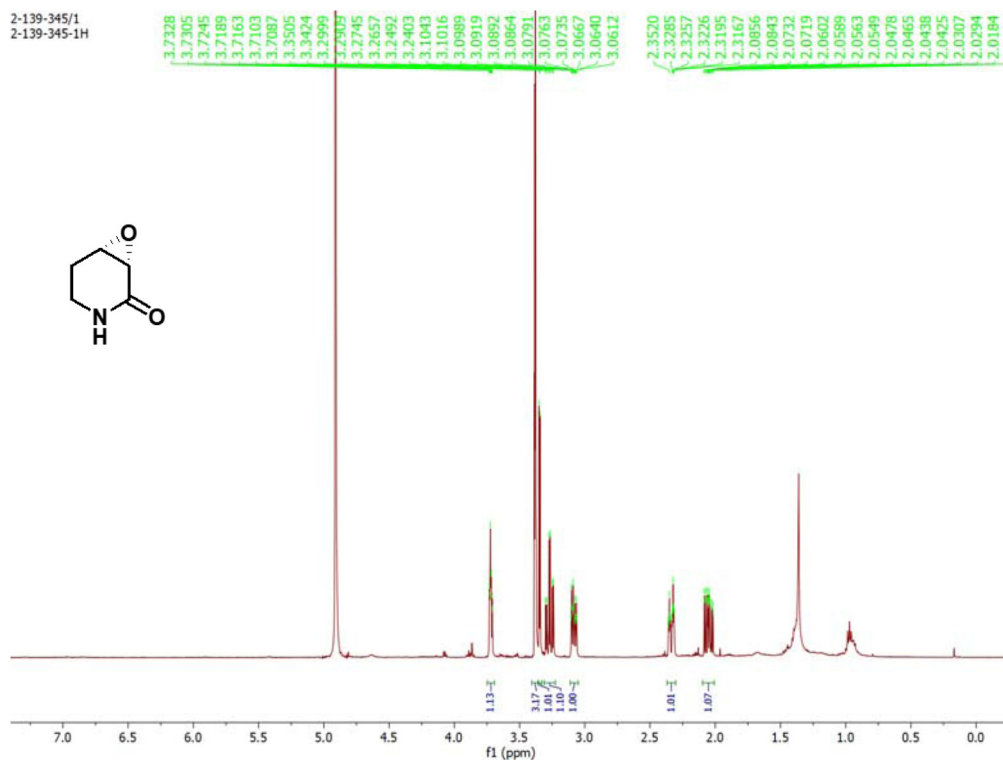


Fig. S11 Proton nuclear magnetic resonance (500 MHz) (methanol-*d*₄) spectrum of compound 7

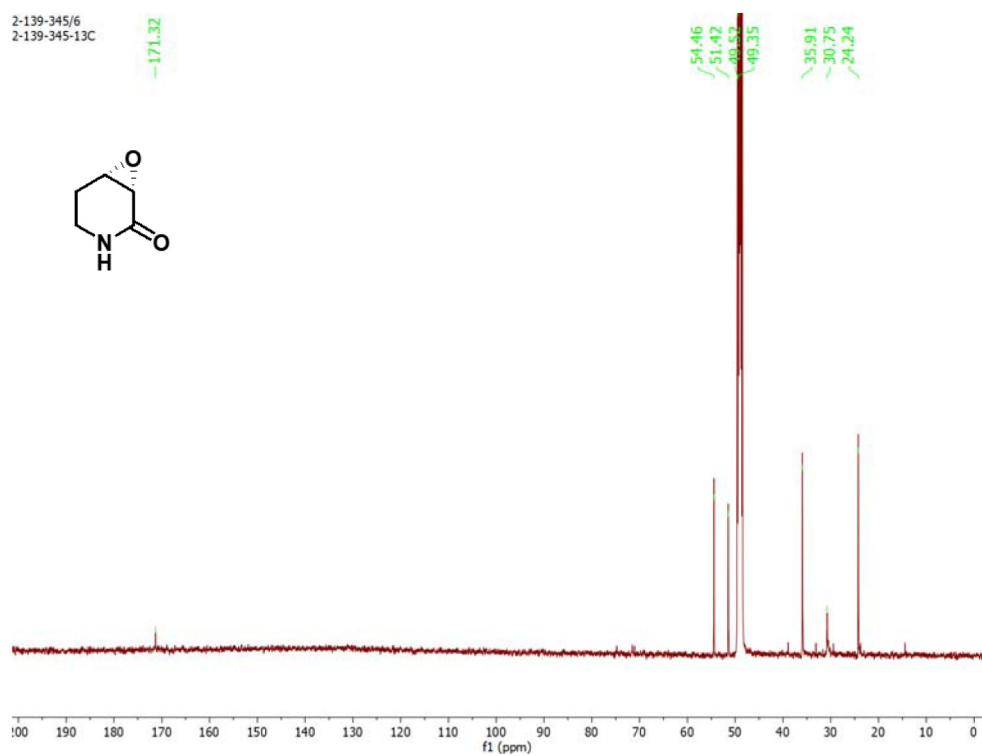


Fig. S12 Carbon-13 nuclear magnetic resonance (125 MHz) (methanol- d_4) spectrum of compound 7