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LIST OF ABBREVIATIONS AND SYMBOLS

δ	Chemical shift
λ	wavelength
[α] _D	Specific rotation
Ø	diameter
μm	Micrometer
μL	Microlitre
°C	Degree celsius
1D	One dimension
2D	Two dimensions
3D	Three dimensions
¹ H NMR	Proton nuclear magnetic resonance
¹³ C NMR	Carbon nuclear magnetic resonance
ANOVA	Analysis of variance
Aq.	Aqueous
br.s.	Broad singlet
calcd	Calculated
cmright	Centimeter Chiang Mai University
cm ²	Square centimeter
CC	Column chromatography
CDCl ₃	Deuterated chloroform

CD ₃ OD	Deuterated methanol
CHCl ₃	Chloroform
CeCl ₃ .H ₂ O	Cerium chloride
COSY	correlation spectroscopy
d	doublet
dd	doublet of doublets (NMR)
dq	doublet of quartets (NMR)
dt 🖸	doublet of triplets (NMR)
ddd	doublet of doublets (NMR)
ddq	doublet of doublet of quartets (NMR)
dddd	doublet of doublet of doublets (NMR)
DCM/CH ₂ Cl ₂	Dichloromethane
DEPT	Distortionless Enhanced Polarization Transfer
etc.	et cetera.
eV	electron volt
EIMS	Electron impact mass spectrum
EI +ve	electron impact (positive ion mode)
ESIMS	electrospray ionization mass spectrum
ESI +ve	electrospray ionization (positive ion mode)
Fig.	figure by Chiang Mai University
g	graments reserved
h/hr	hours

H_2O_2	Hydrogen peroxide
HCl	Hydrochloric acid
HMBC	Heteronuclear Multiple Bond Correlation
HPTLC	High Performance Thin Layer Chromatography
HRMS	High Resolution Mass Spectroscopy
HSQC	Heteronuclear Single Quantum Correlation
Hz	Hertz
i.e.	That is
J	coupling constant (NMR)
kg	kilogram
K_2CO_3	Potassium carbonate
KI	Potassium iodide
lit.	literature
LC 50	lethal concentration for 50% mortality of the test organism
m	multiplet (NMR)
m/z,	mass number divided by its charge
m^2	Square meters
mg	milligram
mm	millimetre
multight	multiplicity (NMR)
mL	millilitre hts reserved
M^+	molecular ion

Me	methyl
MeOH	Methanol
MHz	megahertz
nm	nanometre
NH ₃	Ammonia
NMR	Nuclear Magnetic Resonance
NOESY	Nuclear overhauser effect spectroscopy
ОН	Hydroxy
OMe	Methoxy
ppm	parts per million
Ph	Phenyl
PTLC	Preparative Thin Layer Chromatography
q	quartet (NMR)
qd	quartet of doublets (NMR)
quin	quintet (NMR)
RT	room temperature
S	singlet (NMR)
S.D.	Significant Difference
Sp.	Singular specie
Spp.	Plural species Chiang Mai University
SPSS	Statistical Package for the Social Sciences (SPSS Inc.)
t	triplet (NMR)



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