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## NMR-based metabolomic characterization of *Vanilla planifolia*

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# **NMR-based metabolomic characterization of**

*Vanilla planifolia*

PROEFSCHRIFT

ter verkrijging van  
de graad van Doctor aan de Universiteit Leiden,  
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door

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geboren te Saint-Denis, La Réunion (France)  
in 1982

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## List of Abbreviations

4CL	<i>p</i> -coumarate-CoA ligase
AFLP	amplified fragment length polymorphism
ANOVA	analysis of variance
ASCII	american standard code for information interchange
CAM	crassulacean acid metabolism
CAT	catalase
DNA	deoxyribonucleic acid
cDNA	complementary deoxyribonucleic acid
CoA	coenzyme A
COMT	caffeic acid <i>O</i> -methyltransferase
COSY	correlated spectroscopy
CV-ANOVA	cross validated analysis of variance
CymMV	Cymbidium mosaic virus
DGCCRF	direction générale de la concurrence, de la consommation et de la répression des fraudes
DW	dry weight
ELISA	enzyme-linked immunosorbent assay
FT	Fourier transformation
GABA	$\gamma$ -amino butyric acid
Glucoside A	bis[4-( $\beta$ -D-glucopyranosyloxy)-benzyl]-2-isopropyltartrate
Glucoside B	bis[4-( $\beta$ -D-glucopyranosyloxy)-benzyl]-2-(2-butyl)tartrate
HBS	<i>p</i> -hydroxy-benzaldehyde synthase
HMBC	heteronuclear multiple bond correlation
HPLC	high performance liquid chromatography
LB	line broadening factor
LC-MS	liquid chromatography - mass spectrometry
NMR	nuclear magnetic resonance
OMT	<i>O</i> -methyltransferase
PAL	phenylalanine ammonia lyase
PBS	phosphate buffer saline
PC	principal component
PCA	principal component analysis
PEPc	phosphoenolpyruvate carboxylase
PLS	partial least squares modeling
PLS-DA	partial least squares-discriminant analysis
POD	peroxidase
PPO	polyphenol oxidase
PW	pulse width
RAPD	random amplified polymorphic DNA
RD	relaxation delay
RNA	ribonucleic acid
RSD	relative standard deviation
SD	standard deviation
SE	standard error
SSB	sine bell shift
TMSP	trimethylsilylpropionic acid
UV-DAD	ultra violet – diode array detector