Ureidopyrazine Derivatives: Synthesis and Biological Evaluation as Anti-infectives and Abiotic Elicitors

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Supplementary Materials

Table S1: Prepared compounds with their activity against fast growing *M. smegmatis* and *M. aurum*.

No.	R	Antimycobacterial Activity MIC (μg/mL)	
		M. smeg	*M. aurum*
1	hydrogen	>500	>500
2	propyl	>500	>500
3	benzyl	≥500	≥500
4	phenyl	≥500	≥500
5	phenyl	≥500	≥500
6	4-methoxyphenyl	≥500	≥500
7	2-chlorophenyl	≥500	≥500
8	4-chlorophenyl	≥250	≥250
9	3,4-dichlorophenyl	≥125	≥125
10	propyl	≥500	≥500
11	butyl	≥500	250
12	pentyl	≥500	125
13	octyl	≥500	≥500
14	decyl	≥250	≥250
15	benzyl	≥500	≥500
16	4-methoxyphenyl	≥500	≥500
17	2-chlorophenyl	≥125	≥125
18	4-chlorophenyl	≥500	≥500
19	3,4-dichlorophenyl	≥250	≥250
20	2-chlorobenzyl	≥125	≥125
	INH	7.81-15.63	1.95-3.91
	RFM	12.5-25	0.78-1.56
	CPX	0.06-0.13	0.008-0.016

Table S2: Antibacterial assay results of prepared compounds.

Pathogen	Time(h)	Antibacterial Activity [MIC (μmol.l^{-1})]														
		1	2	4	5	8	10	11	12	13	14	15	16	17	19	20
SA	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
MRSA	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
SE	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
EF	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
EC	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
KP	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
SEMA	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
PA	72hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	120hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500

1. **SA**- *Staphylococcus aureus*
2. **MRSA**- *Staphylococcus aureus* methicilin resistant
3. **SE**- *Staphylococcus epidermidis*
4. **EF**- *Enterococcus faecalis*
5. **EC**- *Escherichia coli*
6. **KP**- *Klebsiella pneumoniae*
7. **SEMA**- *Serratia marcescens*
8. **PA**- *Pseudomonas aeruginosa*

Table S3: Antifungal assay results of prepared compounds.

Pathogen	Time(h)	Antifungal Activity [MIC (μmol.l^{-1})]														
		1	2	4	5	8	10	11	12	13	14	15	16	17	19	20
CA	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
CK	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
CP	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
CT	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
AF	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
AFla	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
AC	24hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	48hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
TI	72hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500
	120hr	>500	>500	>125	>500	>125	>500	>500	>500	>500	>250	>500	>125	>500	>500	>500

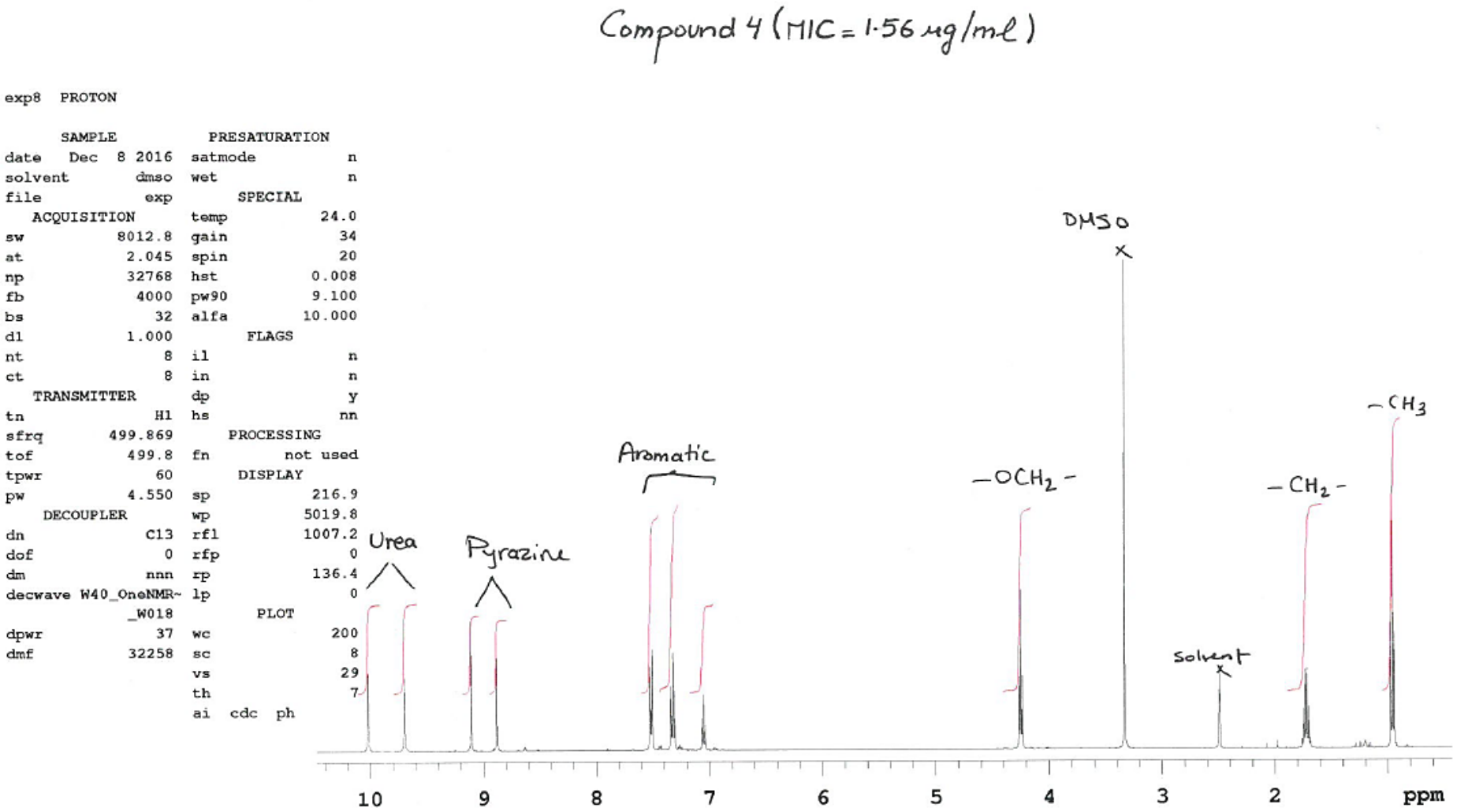
1. **CA1**- *Candida albicans*
2. **CK**- *Candida krusei*
3. **CP**- *Candida parapsilosis*
4. **CT**- *Candida tropicalis*
5. **AF**- *Aspergillus fumigatus*
6. **AFla**- *Aspergillus flavus*
7. **AC**- *Absidia/Lichtheimia corymbifera*
8. **TI**- *Trichophyton interdigitale*

Table S4: Rutin content (µg.g^{-1} DW) in *Fagopyrum esculentum* var. Bamby callus culture after treatment with compounds 8 and 18.

Time (h)	Rutin content (µg.g^{-1} DW) for compound 8 at conc. 2.993.10^{-3} mol.l^{-1}	Rutin content (µg.g^{-1} DW) For compound 18 at conc. 4.056. 10^{-3} mol.l^{-1}
6	0.80	1.01
12	0.83	0.53
24	0.58	0.57
24K*	0.47	0.47
48	0.27	0.21
72	0.08	0.36
168	0.00	0.00
168K*	0.00	0.21

*K: control with no elicitor

[1]HNMR spectra for compound 4



^{13}CNMR for compound 4

exp8 CARBON

SAMPLE		PRESATURATION	
date	Dec 8 2016	satmode	n
solvent	dmso	wet	n
file	exp	SPECIAL	
ACQUISITION		temp	24.0
sw	31250.0	gain	30
at	1.049	spin	20
np	65536	hst	0.008
fb	17000	pw90	11.300
bs	1	alfa	10.000
dl	1.000	FLAGS	
nt	1000	il	n
ct	285	in	n
TRANSMITTER		dp	y
tn	C13	hs	nn
sfrq	125.705	PROCESSING	
tof	1913.9	lb	1.00
tpwr	55	fn	not used
pw	5.650	DISPLAY	
DECOUPLER		sp	51.8
dn	H1	wp	21801.0
dof	0	rf1	6823.5
dm	yyy	rfp	4989.9
decwave	w	rp	51.3
dpwr	41	lp	0
dmf	12346	PLOT	
		wc	200
		sc	0
		vs	36
		th	2
		nm cdc ph