Supplementary Material: (2*S*,5*R*)-2-Isopropyl-5-methylcyclohexanone Hydrazones

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Figure S1. ¹H NMR spectrum of 2-phenoxy-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene] acetohydrazide (**3a**).



Figure S2. ¹H NMR spectrum of 2-(4-chlorophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene] acetohydrazide (**3b**).



Figure S3. ¹H NMR spectrum of 2-(4-*tert*-butylphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3c**).



of

FigureS4.¹HNMRspectrumyl)cyclohexylidene]acetohydrazide (3d).

2-(4-bromophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-

0.88



Figure S5. ¹H NMR spectrum of 2-(4-phenoxyphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3e**).



Figure S6. ¹³C NMR spectrum of 2-phenoxy-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene] acetohydrazide (**3a**).



of

FigureS7.13CNMRspectrumyl)cyclohexylidene]acetohydrazide (3b).

2-(4-chlorophenoxy)-N'-[(2S,5R)-5-methyl-2-(propan-2-



Figure S8. ¹³C NMR spectrum of 2-(4-*tert*-butylphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3c**).



of

Figure S9. ¹³C NMR spectrum yl)cyclohexylidene]acetohydrazide (3d).

2-(4-bromophenoxy)-N'-[(2S,5R)-5-methyl-2-(propan-2-



Figure S10. ¹³C NMR spectrum of 2-(4-phenoxyphenoxy)-N'-[(2S,5R)-5-methyl-2-(propan-2yl)cyclohexylidene]acetohydrazide (3e).



Figure S11. FTIR-ATR and Raman spectra of 2-phenoxy-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl) cyclohexylidene]acetohydrazide (**3a**).



Figure S12. FTIR-ATR and Raman spectra of 2-(4-chlorophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3b**).



Figure S13. FTIR-ATR and Raman spectra of 2-(4-*tert*-butylphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3c**).



Figure S14. FTIR-ATR and Raman spectra of 2-(4-bromophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3d**).



Figure S15. FTIR-ATR and Raman spectra of 2-(4-phenoxyphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3e**).



Figure S16. HPLC chromatogram and ESI mass spectrum of 2-phenoxy-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3a**).

x10⁷

6.5 6 5.5 5 4.5

3.5

2.5 2 1.5

0.5 0

x10 ⁵

4.5

3.5

2.5

1.5

0.5

100 150 200



Figure S17. HPLC chromatogram and ESI mass spectrum of 2-(4-chlorophenoxy)-N'-[(2S,5R)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (3b).

3.5

3 2.5

2

1.5

1 0.5

0

332 334 336

520.85

550 600

250 300 350 400 450 Counts vs. Mass-to-Charge (m/z)

339.39

338 340 342 344 346 Counts vs. Mass-to-Charge (m/z)

350 352

348



Figure S18. HPLC chromatogram and ESI mass spectrum of 2-(4-tert-butylphenoxy)-N'-[(2S,5R)-5methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (3c).



Figure S19. HPLC chromatogram and ESI mass spectrum of 2-(4-bromophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3d**).



Figure S20. HPLC chromatogram and ESI mass spectrum of 2-(4-phenoxyphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3e**).

DSC File: C:\TA\Data\DSC\Dim\Nest\MEN-13.001



Figure S21. DSC thermogram of 2-phenoxy-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3a**).



Figure S22. DSC thermogram of 2-(4-chlorophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3b**).

DSC File: C:\TA\Data\DSC\Dim\Nest\MEN-18.001



Figure S23. DSC thermogram of 2-(4-*tert*-butylphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3c**).



DSC File: C:\TA\Data\DSC\Dim\Nest\MEN-14 RECYRCLE.001

Figure S24. DSC thermogram of 2-(4-bromophenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3d**).

DSC File: C:\TA\Data\DSC\Dim\Nest\MEN-19.001



Figure S25. DSC thermogram of 2-(4-phenoxyphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3e**).



of

FigureS26.EImassspectrayl)cyclohexylidene]acetohydrazide (3a).

2-phenoxy-N'-[(2S,5R)-5-methyl-2-(propan-2-



yl)cyclohexylidene]acetohydrazide (**3b**).



Figure S28. FAB mass spectra of 2-(4-*tert*-butylphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3c**).



yl)cyclohexylidene]acetohydrazide (3d).



Figure S30. FAB mass spectra of 2-(4-phenoxyphenoxy)-*N*'-[(2*S*,5*R*)-5-methyl-2-(propan-2-yl)cyclohexylidene]acetohydrazide (**3e**).





Figure S31. Extracted ion mobilogram of compound **3b** (m/z 337.16) obtained from TIMS-TOF-MS (**A**), MS/MS spectrum of the *Z* isomer (**B**) and MS/MS spectrum of the *E* isomer (**C**).