

Antibacterial and Antitubercular Activities of Cinnamylideneacetophenones

Carlos R. Polaquini^{a,†}, Guilherme S. Torrezan^{a,†}, Vanessa R. Santos^b, Ana C. Nazaré^a,
Débora L. Campos^c, Laíza A. Almeida^a, Isabel C. Silva^c, Henrique Ferreira^d, Fernando
R. Pavan^c, Cristiane Duque^b and Luis O. Regasini^{a,*}

^aLaboratory of Green and Medicinal Chemistry, Department of Chemistry and
Environmental Sciences, Institute of Biosciences, Humanities and Exact Sciences, São
Paulo State University (Unesp), São José do Rio Preto, SP, Brazil

^bDepartment of Pediatric Dentistry and Public Health, Araçatuba Dental School, São
Paulo State University (Unesp), Araçatuba, SP, Brazil

^cDepartment of Biological Sciences, School of Pharmaceutical Sciences, São Paulo
State University (Unesp), Araraquara, SP, Brazil

^dDepartment of Biochemistry and Microbiology, Institute of Biosciences, São Paulo
State University (Unesp), Rio Claro, SP, Brazil

* Corresponding author. Tel.: +55 17 3221-2362.

E-mail address: regasini@ibilce.unesp.br (L.O. Regasini).

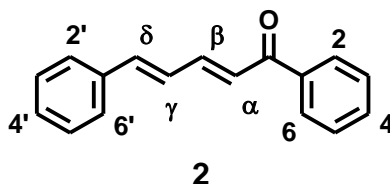
[†] These two authors contributed equally to this work.

26 **1. SPECTROSCOPY DATA ANALYSES**

27 Melting points of the cinnamylideneacetophenones were determined on a capillary
28 point apparatus with a digital thermometer. UV-Vis spectrum and purity of compounds
29 were recorded on HPLC-PAD analyses performed for calculations of partition
30 coefficient, using MeOH:H₂O (3:1) as mobile phase. ¹H NMR and ¹³C NMR spectra
31 were recorded on a Bruker Avance III 14.1 T (600 MHz), Bruker Avance III 9.4 T (400
32 MHz) and Bruker Fourier 7.1 T (300 MHz) spectrometers. Compounds were solubilized
33 in deuterated chloroform (CDCl₃). The chemical shifts (δ) and coupling constants (J)
34 were expressed in ppm and Hz, respectively. Multiplicities were reported as singlet (s),
35 doublet (d), doublet of doublet (dd), doublet of doublet of doublets (ddd) and multiplet
36 (m).

37

38 1.1. (*2E,4E*)-1,5-diphenylpenta-2,4-dien-1-one (**2**)



39

40 Pale yellow crystal

41 **Yield:** 33 %

42 **Purity:** 99.1%

43 **Melting point:** 99–102 °C

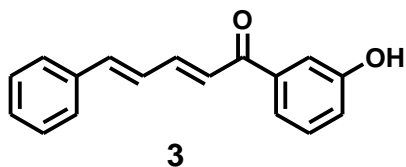
44 **UV-Vis:** λ_{\max} 345 nm

45 **¹H NMR (400 MHz):** 8.01 (d; 7.2; H-2 and H-6); 7.67–7.50 (H- β , H-3, H-4, H-5, H-2'
46 and H-6'), 7.42–7.35 (H-3', H-4' and H-5), 7.12 (d; 15.2; H- α), 7.06–7.05 (H- γ and H-
47 δ).

48 ¹³C NMR (100 MHz): 190.6 (C=O), 144.9 (C-β), 142.0 (C-δ), 138.2 (C-1), 136.1 (C-
49 1'), 132.7 (C-4), 129.2 (C-α), 128.9 (C-2 and C-6), 128.6 (C-3' and C-5'), 128.4 (C-3
50 and C-5), 127.3 (C-2 and C-6), 126.7 (C-4'), 125.5 (C-γ).

51

52 1.2. (2E,4E)-1-(3-hydroxyphenyl)-5-phenylpenta-2,4-dien-1-one (3)



53

54 Brown crystal

55 **Yield:** 91 %

56 **Purity:** 98.4%

57 **Melting point:** 192–195 °C

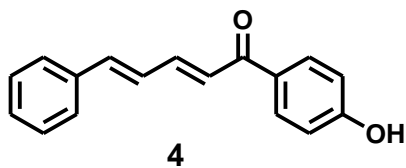
58 **UV-Vis:** λ_{max} 346 nm

59 ¹H NMR (600 MHz): 7.66–7.62 (m; H-β), 7.57 (dd; 1.8 and 1.8; H-2), 7.56 (d; 7.8; H-
60 6), 7.53 (dd; 1.2 and 7.8; H-2' and H-6'), 7.42–7.36 (H-5, H-3', H-4' and H-5'), 7.12–
61 7.11 (m; H-4), 7.10 (d; 1.5, H-α), 7.06–7.05 (H-γ and H-δ), 6.06 (s; 3-OH).

62 ¹³C NMR (150 MHz): 190.8 (C=O), 156.5 (C-3), 145.5 (C-β), 142.5 (C-δ), 139.5 (C-
63 1), 136.0 (C-1'), 129.9 (C-5), 129.4 (C-α), 128.9 (C-3' and C-5'), 127.4 (C-2' and C-
64 6'), 126.8 (C-4'), 125.2 (C-γ), 120.9 (C-6), 120.4 (C-4), 115.1 (C-2).

65

66 1.3. (2E,4E)-1-(4-hydroxyphenyl)-5-phenylpenta-2,4-dien-1-one (4)



67

68 Yellow solid

69 **Yield:** 82 %

70 **Purity:** 96.7%

71 **Melting point:** 197–200 °C

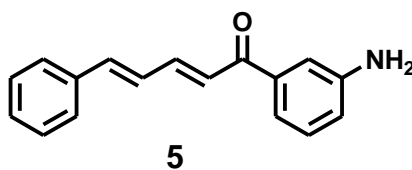
72 **UV-Vis:** λ_{\max} 350 nm

73 **^1H NMR (600 MHz):** 7.98 (d; 8.4; H-2 and H-6), 7.65–7.61 (m; H- β), 7.52 (dd; 1.2 and
74 7.8; H-2' and H-6'), 7.41–7.35 (H-3', H-4' and H-5'), 7.14 (d; 14.4; H- α), 7.05–7.04
75 (H- γ and H- δ), 6.97 (d; 8.4; H-3 and H-5).

76 **^{13}C NMR (150 MHz):** 189.3 (C=O), 160.5 (C-4), 144.6 (C- β), 141.8 (C- δ), 136.1 (C-
77 1'), 131.1 (C-2 and C-6), 130.9 (C-1), 129.2 (C- α), 128.9 (C-3' and C-5'), 127.3 (C-2'
78 and C-6'), 127.0 (C-4'), 125.2 (C- γ), 115.6 (C-3 and C-5).

79

80 1.4. (2*E*,4*E*)-1-(3-aminophenyl)-5-phenylpenta-2,4-dien-1-one (**5**)



81

82 Yellow solid

83 **Yield:** 35 %

84 **Purity:** 99.8%

85 **Melting point:** 168–171 °C

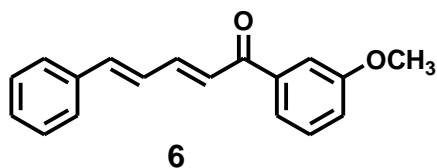
86 **UV-Vis:** λ_{\max} 343 nm

87 **^1H NMR (600 MHz):** 7.62–7.58 (m; H- β), 7.52 (dd; 1.2 and 7.8; H-2' and H-6'), 7.41–
88 7.33 (H-2, H-6, H-3', H-4' and H-5'), 7.29 (dd; 7.8 and 7.8; H-5), 7.07 (d; 15; H- α),
89 7.03–7.02 (H- γ and H- δ), 6.92 (ddd; 0.6, 2.4 and 7.8; H-4), 3.32 (s; 3-NH₂).

90 **^{13}C NMR (150 MHz):** 190.7 (C=O), 146.6 (C-3), 144.7 (C- β), 141.8 (C- δ), 139.3 (C-
91 1), 136.1 (C-1'), 129.4 (C-5), 129.2 (C- α), 128.9 (C-3' and C-5'), 127.3 (C-2' and C-
92 6'), 127.0 (C-4'), 125.7 (C- γ), 119.5 (C-4), 118.9 (C-6), 114.5 (C-2).

93

94 1.5. (2*E*,4*E*)-1-(3-methoxyphenyl)-5-phenylpenta-2,4-dien-1-one (**6**)



95

96 Yellow crystal

97 **Yield:** 78 %

98 **Purity:** 98.7%

99 **Melting point:** 84–87 °C

100 **UV-Vis:** λ_{max} 349 nm

101 **¹H NMR (600 MHz):** 7.66–7.61 (m; H- β), 7.58 (ddd; 1.2, 1.2 and 7.6; H-6), 7.54–7.53

102 (H-5, H-2' and H-6'), 7.44–7.34 (H-2, H-3', H-4' and H-5'), 7.15 (ddd; 1.2, 2.6 and 8.2;

103 H-4), 7.10 (d; 15; H- α), 7.06–7.05 (H- γ and H- δ), 3.90 (s; 3-OCH₃).

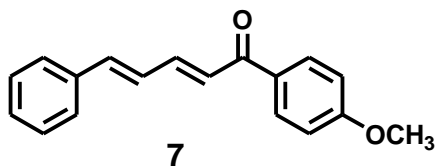
104 **¹³C NMR (150 MHz):** 190.2 (C=O), 159.9 (C-3), 144.9 (C- β), 142.0 (C- δ), 139.6 (C-

105 1), 136.1 (C-1'), 129.6 (C-5), 129.3 (C- α), 128.9 (C-3' and C-5'), 127.3 (C-2' and C-

106 6'), 126.7 (C-4'), 125.4 (C- γ), 121.0 (C-6), 119.3 (C-4), 112.6 (C-2), 55.5 (3-OCH₃).

107

108 1.6. (2*E*,4*E*)-1-(4-methoxyphenyl)-5-phenylpenta-2,4-dien-1-one (**7**)



109

110 Yellow crystal

111 **Yield:** 35 %

112 **Purity:** 99.0%

113 **Melting point:** 91–93 °C

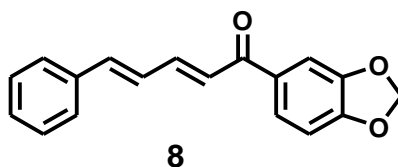
114 **UV-Vis:** λ_{max} 349 nm

115 **¹H NMR (400 MHz):** 8.02 (d; 9.0; H-2 and H-6), 7.65–7.59 (m; H-β), 7.52 (dd; 1.4 and
116 8.2; H-2' and H-6'), 7.42–7.34 (H-3', H-4' and H-5'), 7.13 (d; 14.8; H-α), 7.05–7.03
117 (H-γ and H-δ), 7.00 (d; 9.0; H-3 and H-5), 3.91 (s; 4-OCH₃).

118 **¹³C NMR (100 MHz):** 188.7 (C=O), 163.3 (C-4), 144.0 (C-β), 141.4 (C-δ), 136.2 (C-
119 1'), 131.5 (C-1), 130.7 (C-2 and C-6), 129.1 (C-α), 128.8 (C-3' and C-5'), 127.2 (C-2'
120 and C-6'), 127.1 (C-4'), 125.3 (C-γ), 113.8 (C-3 and C-5), 55.5 (4-OCH₃).

121

122 1.7. (2*E*,4*E*)-1-(3,4-methylenedioxy)-5-phenylpenta-2,4-dien-1-one (**8**)



123

124 Yellow crystal

125 **Yield:** 83 %

126 **Purity:** 99.8%

127 **Melting point:** 123–125 °C

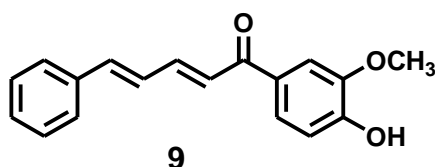
128 **UV-Vis:** λ_{max} 356 nm

129 **¹H NMR (600 MHz):** 7.62 (dd; 1.5 and 8.1; H-2' and H-6'), 7.63–7.59 (m; H-β), 7.53–
130 7.51 (H-2 and H-6), 7.40 (dd; 7.2 and 8.1; H-3' and H-5'), 7.36–7.33 (m; H-4'), 7.08 (d;
131 15; H-α), 7.04–7.03 (H-γ and H-δ), 6.91 (d; 8.4; H-5), 6.08 (s; –OCH₂O–).

132 **¹³C NMR (150 MHz):** 188.2 (C=O), 151.6 (C-4), 148.3 (C-3), 144.3 (C-β), 141.6 (C-
133 δ), 136.2 (C-1'), 133.0 (C-1), 129.2 (C-α), 128.9 (C-3' and C-5'), 127.3 (C-2' and C-
134 6'), 127.0 (C-4'), 125.1 (C-γ), 124.5 (C-6), 108.4 (C-5), 107.9 (C-2), 101.9 (–OCH₂O–).

135

136 1.8. (2*E*,4*E*)-1-(4-hydroxy-3-methoxyphenyl)-5-phenylpenta-2,4-dien-1-one (**9**)



137

138 Yellow crystal

139 **Yield:** 98 %

140 **Purity:** 98.5%

141 **Melting point:** 207–210 °C

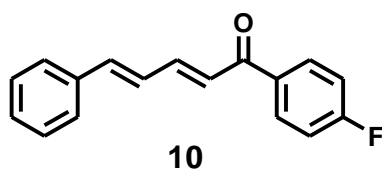
142 **UV-Vis:** λ_{max} 356 nm

143 **¹H NMR (300 MHz):** 7.66–7.58 (H- β , H-2 and H-6), 7.52 (dd; 1.5 and 8.1; H-2' and H-
 144 6'), 7.42–7.33 (H-3', H-4' and H-5'), 7.14 (d; 15; H- α), 7.05–7.03 (H- γ and H- δ), 7.00
 145 (d; 8.4; H-5), 6.10 (s; 4-OH), 4.00 (s; 3-OCH₃).

146 **¹³C NMR (75 MHz):** 188.5 (C=O), 150.3 (C-3), 146.8 (C-4), 144.0 (C- β), 141.5 (C- δ),
 147 136.2 (C-1'), 131.1 (C-1), 129.1 (C- α), 128.9 (C-3' and C-5'), 127.3 (C-2' and C-6'),
 148 127.1 (C-4'), 125.0 (C- γ), 123.5 (C-6), 113.8 (C-5), 110.4 (C-2), 56.1 (4-OCH₃).

149

150 1.9. (2E,4E)-1-(4-fluorophenyl)-5-phenylpenta-2,4-dien-1-one (**10**)



151

152 Yellow solid

153 **Yield:** 71 %

154 **Purity:** 99.1%

155 **Melting point:** 88–91 °C

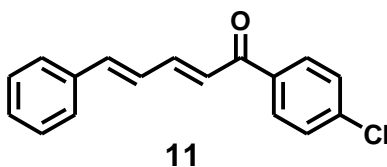
156 **UV-Vis:** λ_{max} 346 nm

157 **¹H NMR (300 MHz):** 8.03 (d; 8.7; H-2 and H-6), 7.67–7.58 (m; H-β), 7.52 (dd; 1.3 and
158 7.9; H-2' and H-6'), 7.43–7.35 (H-3', H-4', H-5'), 7.18 (dd; 8.7 and 9.0; H-3 and H-5),
159 7.11–7.03 (H-α, H-γ and H-δ).

160 **¹³C NMR (75 MHz):** 188.8 (C=O), 165.5 (d; $J_{CF} = 252$ Hz; C-4), 145.1 (C-β), 142.2
161 (C-δ), 136.0 (C-1'), 134.5 (C-1), 131.0 (d; $J_{CF} = 9.0$ Hz; C-2 and C-6), 129.3 (C-α),
162 128.9 (C-3' and C-5'), 127.3 (C-2' and C-6'), 126.8 (C-4'), 124.9 (C-γ), 115.7 (d; $J_{CF} =$
163 21 Hz; C-3 and C-5).

164

165 1.10. (2*E*,4*E*)-1-(4-chlorophenyl)-5-phenylpenta-2,4-dien-1-one (**11**)



166

167 Yellow solid

168 **Yield:** 72 %

169 **Purity:** 99.8%

170 **Melting point:** 124–127 °C

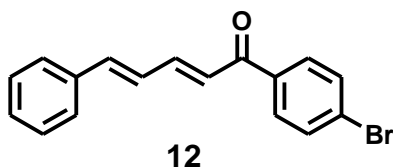
171 **UV-Vis:** λ_{\max} 349 nm

172 **¹H NMR (300 MHz):** 7.94 (d; 8.7; H-2 and H-6), 7.67–7.59 (m; H-β), 7.54–7.35 (H-3,
173 H-5, H-2', H-3', H-4', H-5' and H-6'), 7.09–7.03 (H-α, H-γ and H-δ).

174 **¹³C NMR (75 MHz):** 189.2 (C=O), 145.4 (C-β), 142.5 (C-δ), 139.1 (C-4), 136.5 (C-1),
175 136.0 (C-1'), 129.8 (C-2 and C-6), 129.4 (C-α), 128.9 (C-3, C-5, C-3' and C-5'), 127.4
176 (C-2' and C-6'), 126.8 (C-4'), 124.8 (C-γ).

177

178 1.11. (2*E*,4*E*)-1-(4-bromophenyl)-5-phenylpenta-2,4-dien-1-one (**12**)



179

180 Yellow solid

181 **Yield:** 86 %

182 **Purity:** 98.7 %

183 **Melting point:** 142–145 °C

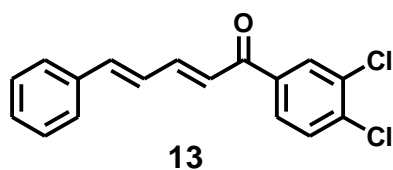
184 **UV-Vis:** λ_{\max} 350 nm

185 **$^1\text{H NMR}$ (300 MHz):** 7.86 (d; 8.5; H-2 and H-6), 7.65 (d; 8.5; H-3 and H-5), 7.62–7.59
186 (m; H- β), 7.52 (dd; 1.5 and 8.1; H-2' and H-6'), 7.43–7.35 (H-3', H-4' and H-5'), 7.08–
187 7.03 (H- α , H- γ and H- δ).

188 **$^{13}\text{C NMR}$ (75 MHz):** 189.4 (C=O), 145.4 (C- β), 142.5 (C- δ), 136.9 (C-1), 136.0 (C-1'),
189 131.9 (C-3 and C-5), 129.9 (C-2 and C-6), 129.4 (C- α), 128.9 (C-3' and C-5'), 127.8
190 (C-4), 127.4 (C-2' and C-6'), 126.8 (C-4'), 124.7 (C- γ).

191

192 1.12. (2E,4E)-1-(3,4-dichlorophenyl)-5-phenylpenta-2,4-dien-1-one (**13**)



193

194 Yellow crystal

195 **Yield:** 79 %

196 **Purity:** 97.5%

197 **Melting point:** 165–167 °C

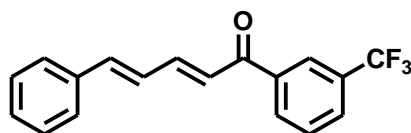
198 **UV-Vis:** λ_{\max} 353 nm

199 **¹H NMR (600 MHz):** 8.08 (d; 2.1; H-2), 7.82 (dd; 2.1 and 8.4; H-6), 7.67–7.63 (m; H-
200 β), 7.59 (d; 8.4; H-5), 7.53 (dd; 1.2 and 7.8; H-2' and H-6'), 7.42–7.35 (H-3', H-4' and
201 H-5'), 7.10–7.02 (H-α, H-γ and H-δ).

202 **¹³C NMR (150 MHz):** 187.9 (C=O), 146.0 (C-β), 143.1 (C-δ), 137.8 (C-4), 137.2 (C-
203 1), 135.9 (C-3), 133.2 (C-1'), 130.7 (C-2), 130.4 (C-5), 129.6 (C-α), 128.9 (C-3' and C-
204 5'), 127.4 (C-6, C-2' and C-6'), 126.6 (C-4'), 124.1 (C-γ).

205

206 1.13. (2*E*,4*E*)-1-(3-(trifluoromethyl)phenyl)-5-phenylpenta-2,4-dien-1-one (**14**)



207

208 Yellow solid

209 **Yield:** 88%

210 **Purity:** 96.1%

211 **Melting point:** 126–130 °C

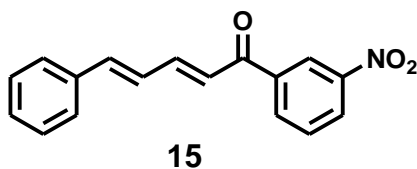
212 **UV-Vis:** λ_{\max} 351 nm

213 **¹H NMR (600 MHz):** 8.25 (m; H-2), 8.18 (d; 7.8; H-6), 7.85 (d; 7.2; H-4), 7.70–7.67
214 (m; H-β), 7.65 (d; 7.8; H-5), 7.54 (dd; 1.8 and 8.1; H-2' and H-6'), 7.43–7.36 (H-3', H-
215 4' and H-5'), 7.12 (d; 15.0; H-α), 7.09–7.08 (H-γ and H-δ).

216 **¹³C NMR (150 MHz):** 189.0 (C=O), 146.1 (C-β), 143.3 (C-δ), 138.8 (C-1), 135.9 (C-
217 1'), 131.5 (C-6), 131.2 (d; J_{CF} = 33 Hz; C-3), 129.5 (C-α), 129.3 (C-5), 129.1 (C-4),
218 128.9 (C-3' and C-5'), 127.4 (C-2' and C-6'), 126.7 (C-4'), 125.2 (C-2), 124.4 (C-γ),
219 123.8 (d; J_{CF} = 271 Hz; 4-CF₃).

220

221 1.14. (2*E*,4*E*)-1-(3-nitrophenyl)-5-phenylpenta-2,4-dien-1-one (**15**)



222

223 Yellow solid

224 **Yield:** 85 %

225 **Purity:** 97.8%

226 **Melting point:** 128–130 °C

227 **UV-Vis:** λ_{\max} 354 nm

228 **^1H NMR (400 MHz):** 8.82 (dd; 2.0 and 2.0; H-2), 8.45 (ddd; 1.2, 2.0 and 8.0; H-4),

229 8.33 (ddd; 1.2, 2.0 and 7.8; H-6), 7.72 (dd; 7.8 and 8.0; H-5), 7.74–7.68 (m; H- β), 7.55

230 (dd; 1.4 and 8.2; H-2' and H-6'), 7.44–7.38 (H-3', H-4' and H-5'), 7.13 (d; 15.6; H- α),

231 7.11–7.09 (H- γ and H- δ).

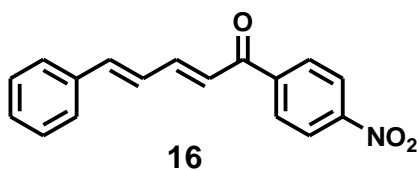
232 **^{13}C NMR (100 MHz):** 187.9 (C=O), 148.4 (C-3), 146.7 (C- β), 143.6 (C- δ), 139.6 (C-

233 1), 135.8 (C-1'), 134.0 (C-6), 129.9 (C-5), 129.7 (C- α), 129.0 (C-3' and C-5'), 127.5

234 (C-2' and C-6'), 126.9 (C-4'), 126.5 (C-4), 123.9 (C- γ), 123.2 (C-2).

235

236 1.15. (2*E*,4*E*)-1-(4-nitrophenyl)-5-phenylpenta-2,4-dien-1-one (**16**)



237

238 Yellow solid

239 **Yield:** 84 %

240 **Purity:** 97.7%

241 **Melting point:** 177–180 °C

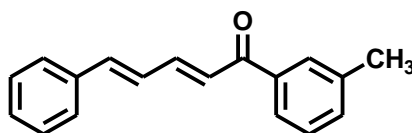
242 **UV-Vis:** λ_{\max} 361 nm

243 **¹H NMR (400 MHz):** 8.36 (d; 8.8; H-3 and H-5), 8.12 (d; 8.8; H-2 and H-6), 7.70–7.64
244 (m; H-β), 7.54 (dd; 1.8 and 8.2; H-2' and H-6'), 7.44–7.38 (H-3', H-4' and H-5'), 7.10–
245 7.05 (H-α, H-γ and H-δ).

246 **¹³C NMR (100 MHz):** 188.9 (C=O), 149.9 (C-4), 146.8 (C-β), 143.7 (C-δ), 143.1 (C-
247 1), 135.7 (C-1'), 129.8 (C-α), 129.3 (C-2 and C-6), 129.0 (C-3' and C-5'), 127.5 (C-2'
248 and C-6'), 126.5 (C-4'), 124.5 (C-γ), 123.8 (C-3 and C-5).

249

250 1.16. (2*E*,4*E*)-1-(3-methylphenyl)-5-phenylpenta-2,4-dien-1-one (**17**)



251

252 Orange oil

253 **Yield:** 49 %

254 **Purity:** 96.4%

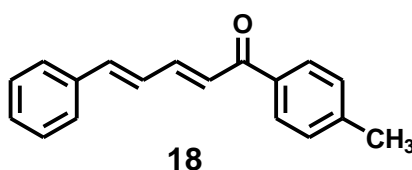
255 **UV-Vis:** λ_{max} 344 nm

256 **¹H NMR (600 MHz):** 7.82 (m; H-2), 7.81–7.79 (m; H-6), 7.65–7.60 (m; H-β), 7.53 (dd;
257 1.2 and 7.8; H-2' and H-6'), 7.42–7.39 (H-4, H-5, H-3' and H-5'), 7.37–7.34 (m; H-4'),
258 7.12 (d; 15; H-α), 7.06–7.05 (H-γ and H-δ), 2.46 (s; 3-CH₃).

259 **¹³C NMR (150 MHz):** 190.7 (C=O), 144.7 (C-β), 141.8 (C-δ), 138.4 (C-3), 138.3 (C-
260 1), 136.1 (C-1'), 133.5 (C-4), 129.2 (C-α), 129.0 (C-2), 128.9 (C-3' and C-5'), 128.5
261 (C-5), 127.3 (C-2' and C-6'), 127.0 (C-4'), 125.6 (C-γ and C-6), 21.4 (3-CH₃).

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263 1.17. (2*E*,4*E*)-1-(4-methylphenyl)-5-phenylpenta-2,4-dien-1-one (**18**)



264

265 Yellow solid

266 **Yield:** 53 %

267 **Purity:** 99.9%

268 **Melting point:** 77–79 °C

269 **UV-Vis:** λ_{\max} 346 nm

270 **¹H NMR (300 MHz):** 7.91 (d; 8.4; H-2 and H-6), 7.66–7.57 (m; H- β), 7.52 (dd; 1.5 and
271 8.1; H-2' and H-6'), 7.42–7.29 (H-3', H-4' and H-5'), 7.31 (d; 8.4; H-3 and H-5), 7.12
272 (d; 14.7; H- α), 7.05–7.03 (H- γ and H- δ), 2.45 (s; 4-CH₃).

273 **¹³C NMR (150 MHz):** 190.0 (C=O), 144.5 (C- β), 143.5 (C-4), 141.7 (C- δ), 136.2 (C-
274 1'), 135.6 (C-1), 129.3 (C-2 and C-6), 129.2 (C- α), 128.9 (C-3 and C-5), 128.6 (C-3'
275 and C-5'), 127.3 (C-2' and C-6'), 127.0 (C-4'), 125.5 (C- γ), 21.7 (4-CH₃).

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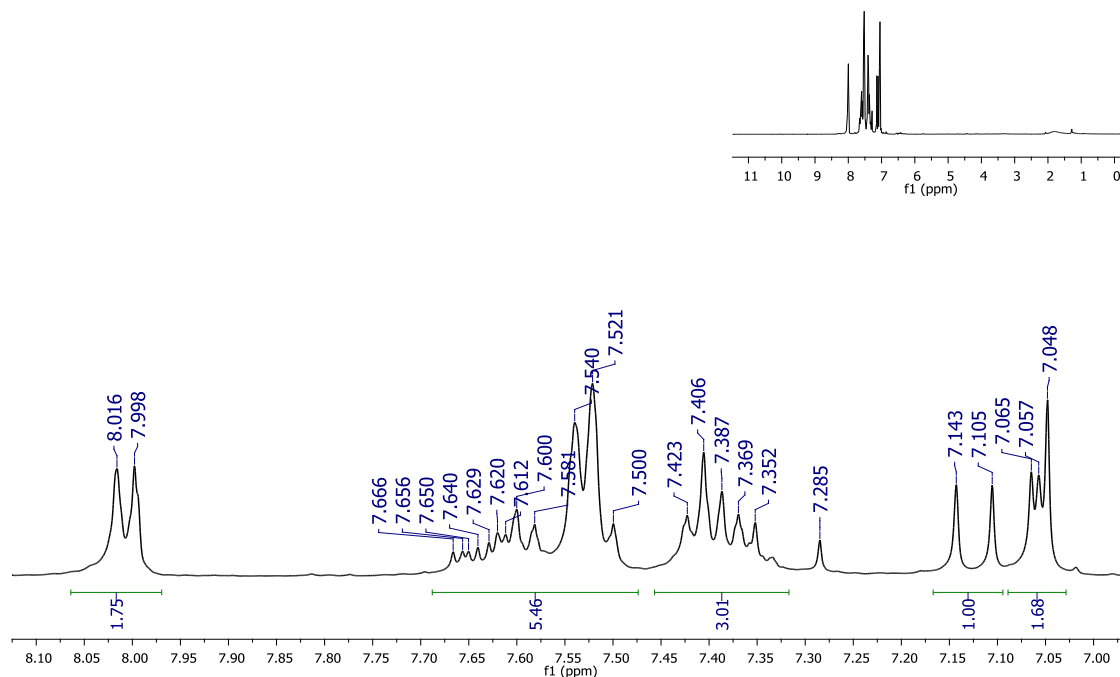
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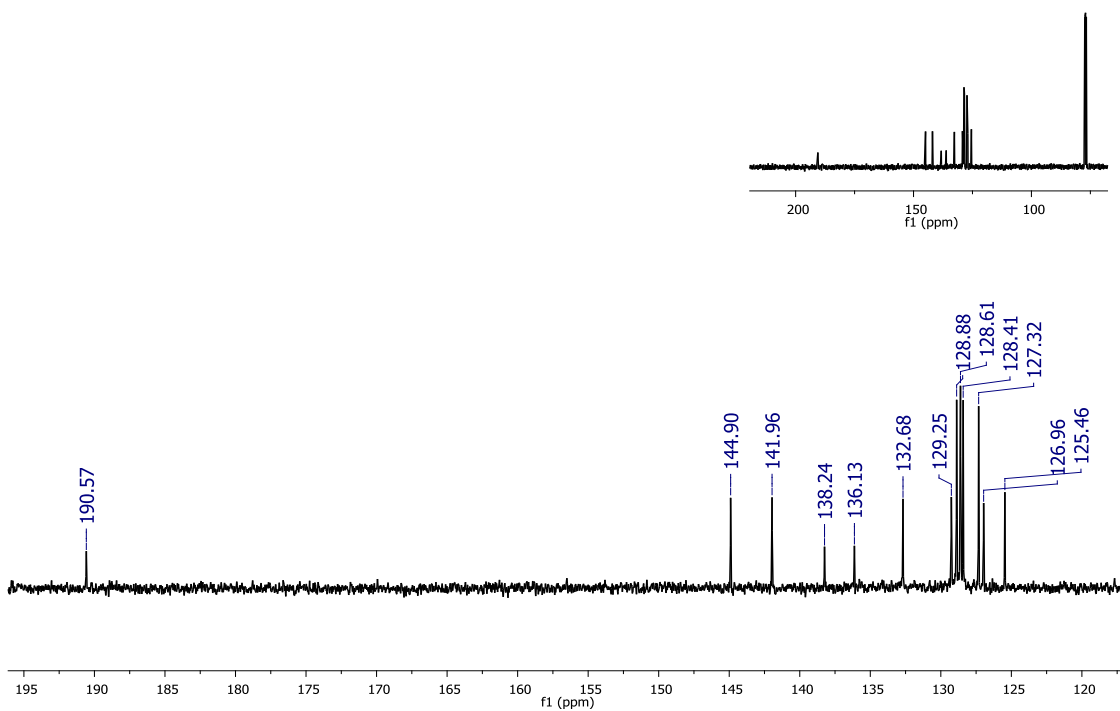
293

294 **Figure S1. i)** ^1H NMR spectrum of cinnamylideneacetophenone **2**



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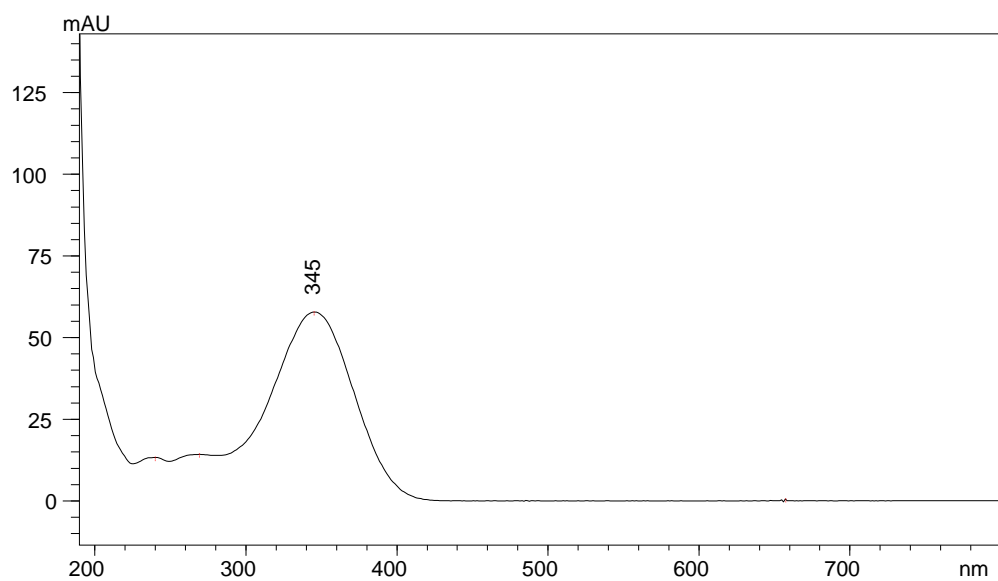
298 **Figure S1. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **2**



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303 **Figure S1. iii)** UV-Vis spectrum of cinnamylideneacetophenone **2**, MeOH/H₂O (3:1)

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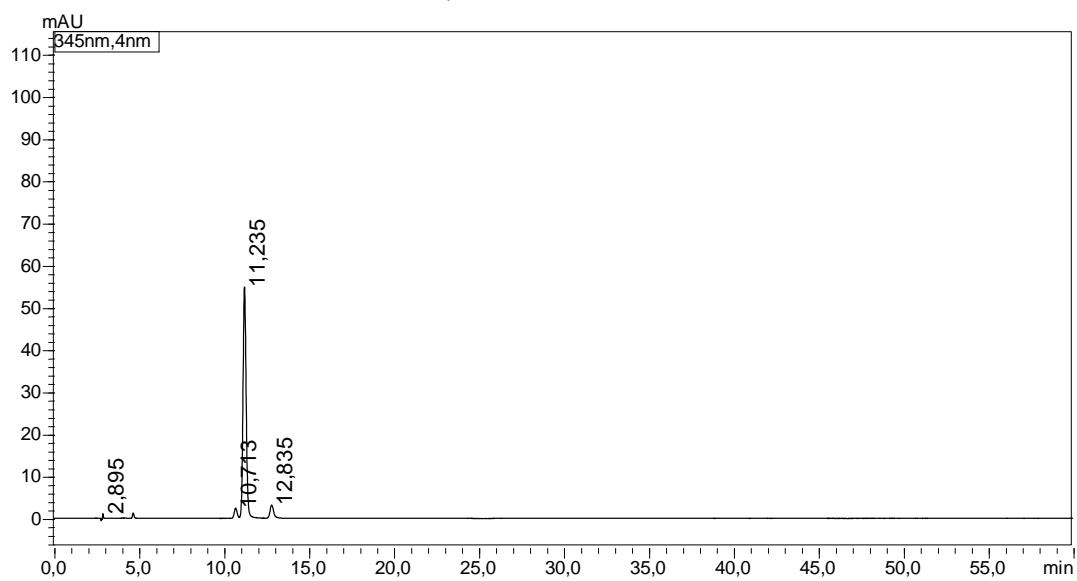
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312 **Figure S1. iv)** HPLC chromatogram of cinnamylideneacetophenone **2**



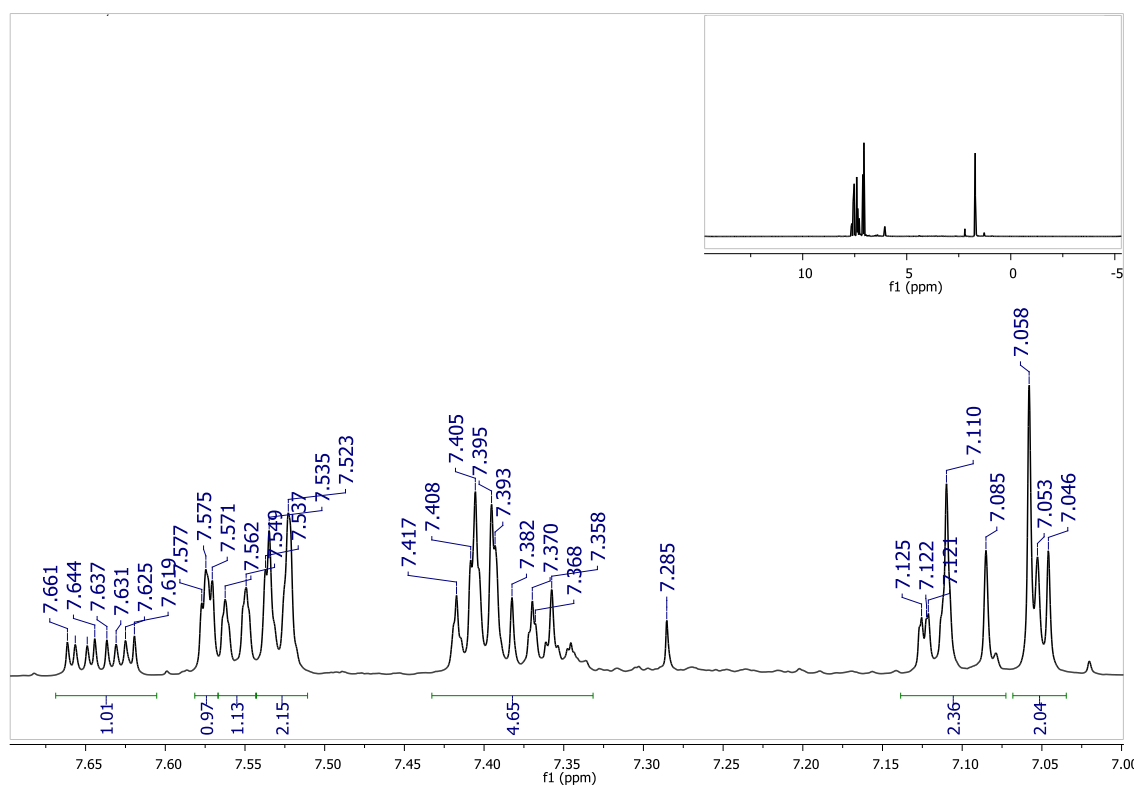
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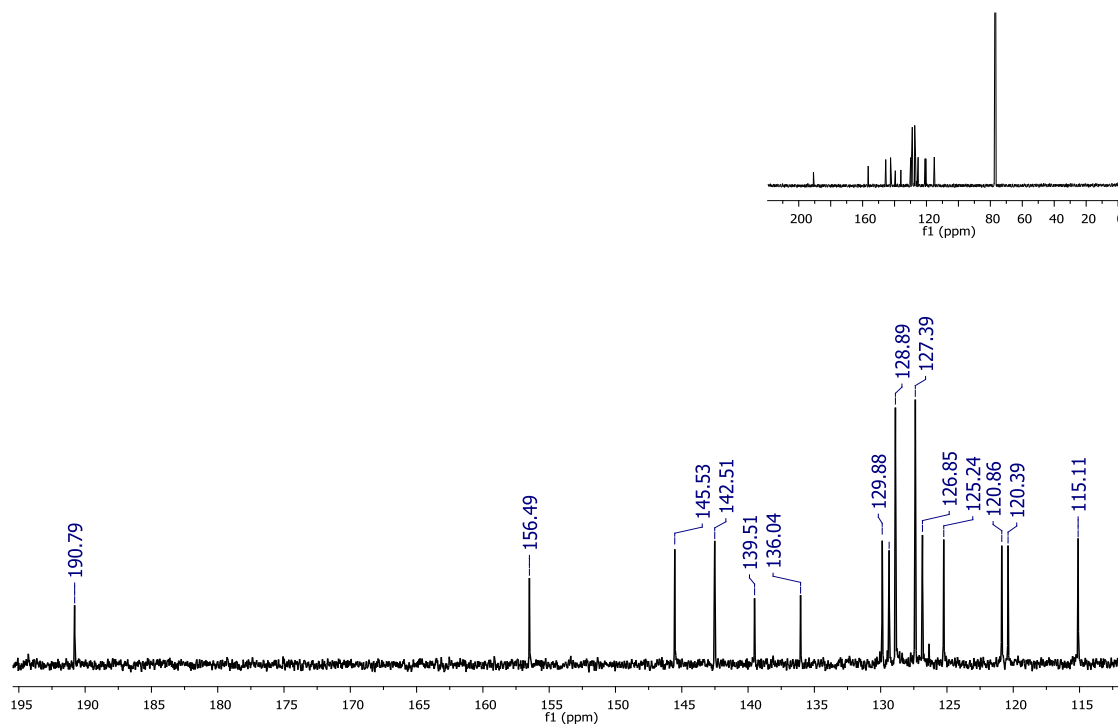
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317 **Figure S2. i)** ^1H NMR spectrum of cinnamylideneacetophenone **3**



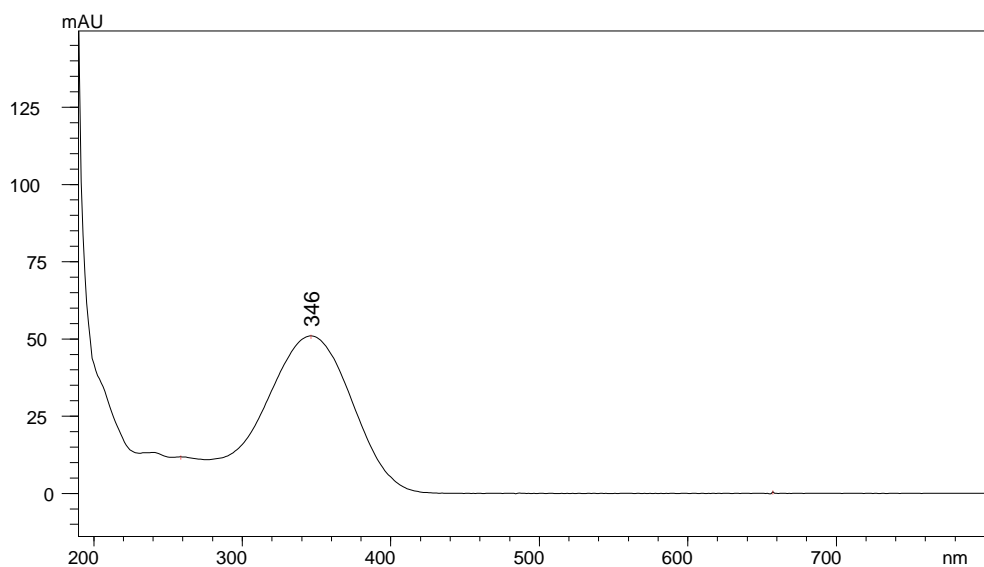
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320 **Figure S2. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **3**



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325 **Figure S2. iii)** UV-Vis spectrum of cinnamylideneacetophenone **3**, MeOH/H₂O (3:1)



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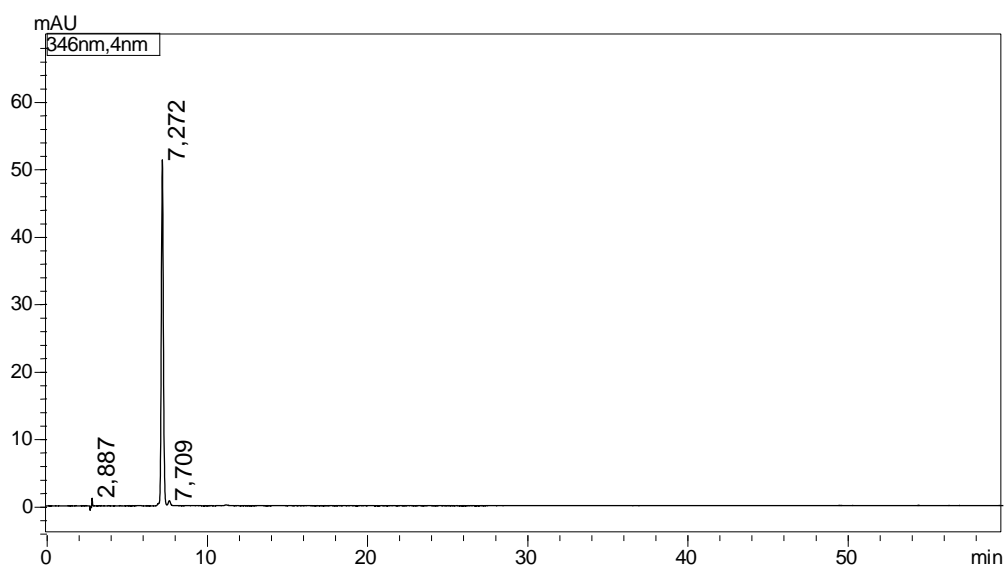
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332 **Figure S2. iv)** HPLC chromatogram of cinnamylideneacetophenone **3**



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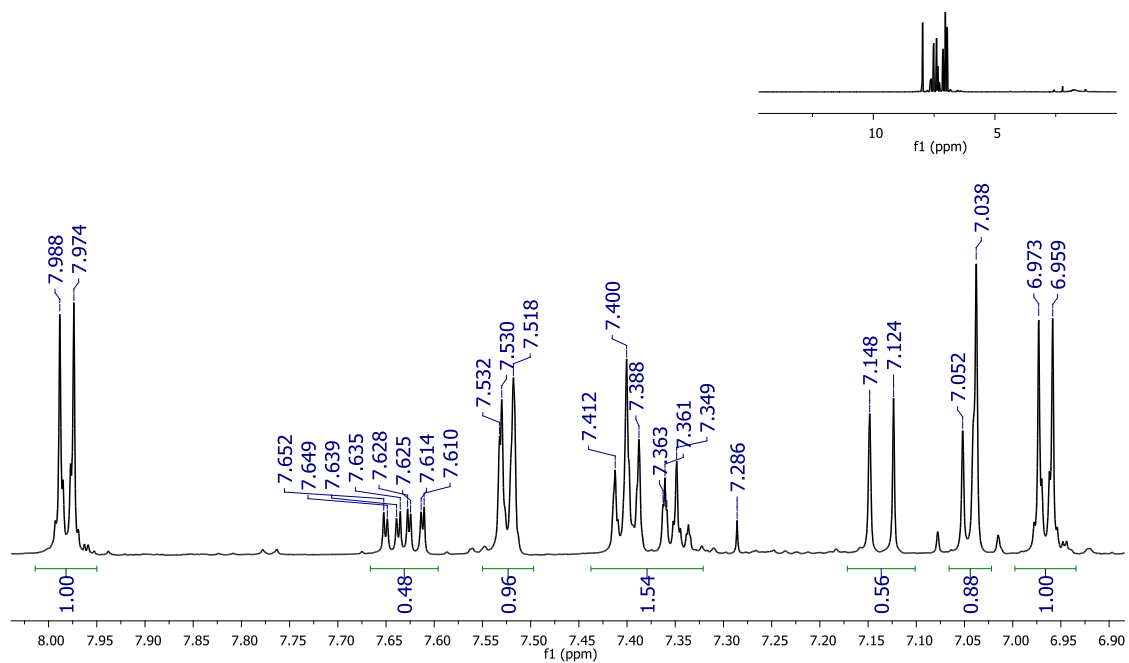
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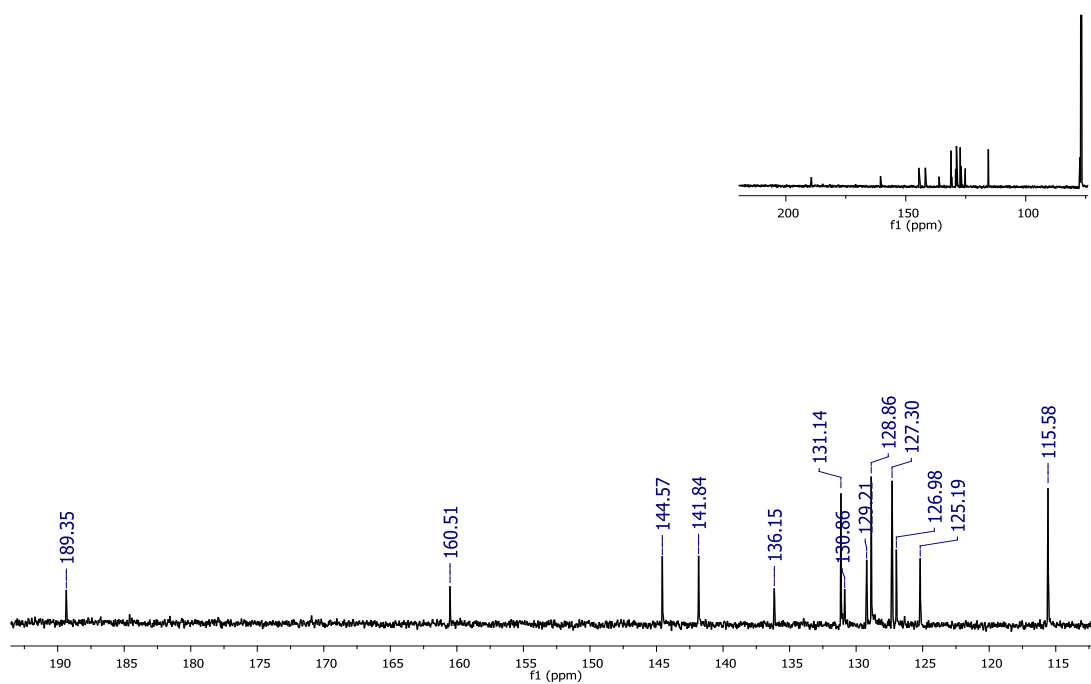
338 **Figure S3. i)** ^1H NMR spectrum of cinnamylideneacetophenone **4**



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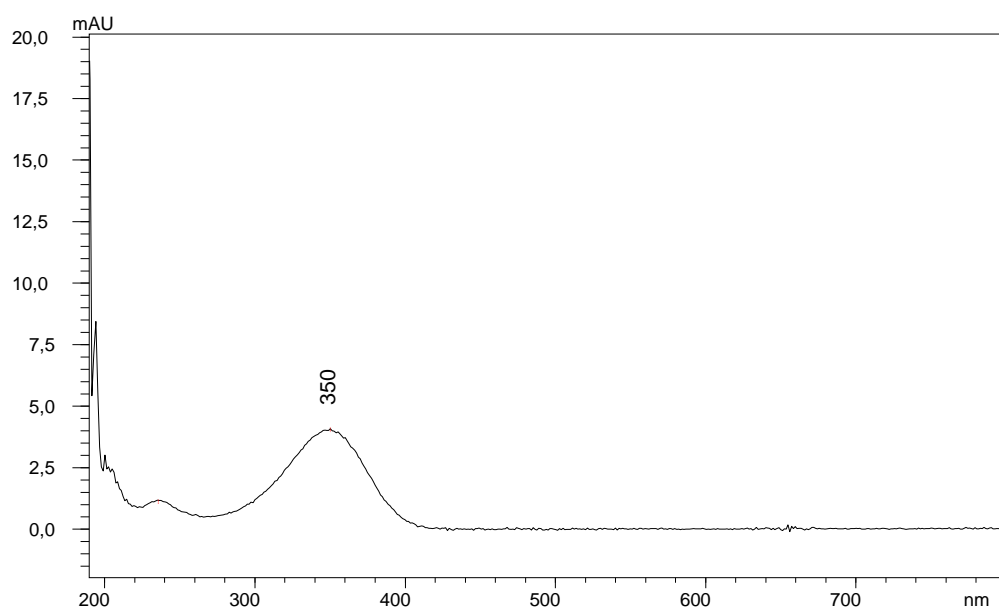
341 **Figure S3. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **4**



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344 **Figure S3. iii)** UV-Vis spectrum of cinnamylideneacetophenone **4**, MeOH/H₂O (3:1)



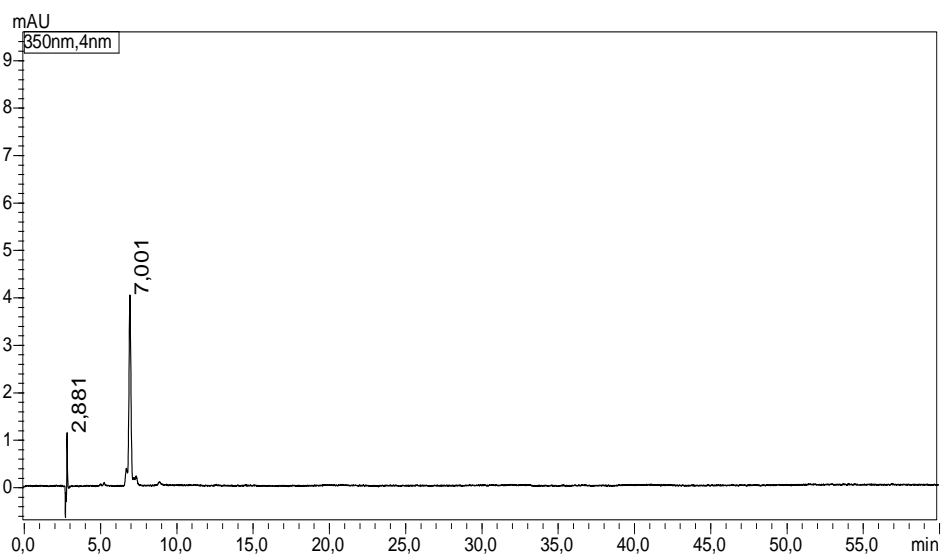
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349 **Figure S3. iv)** HPLC chromatogram of cinnamylideneacetophenone **4**



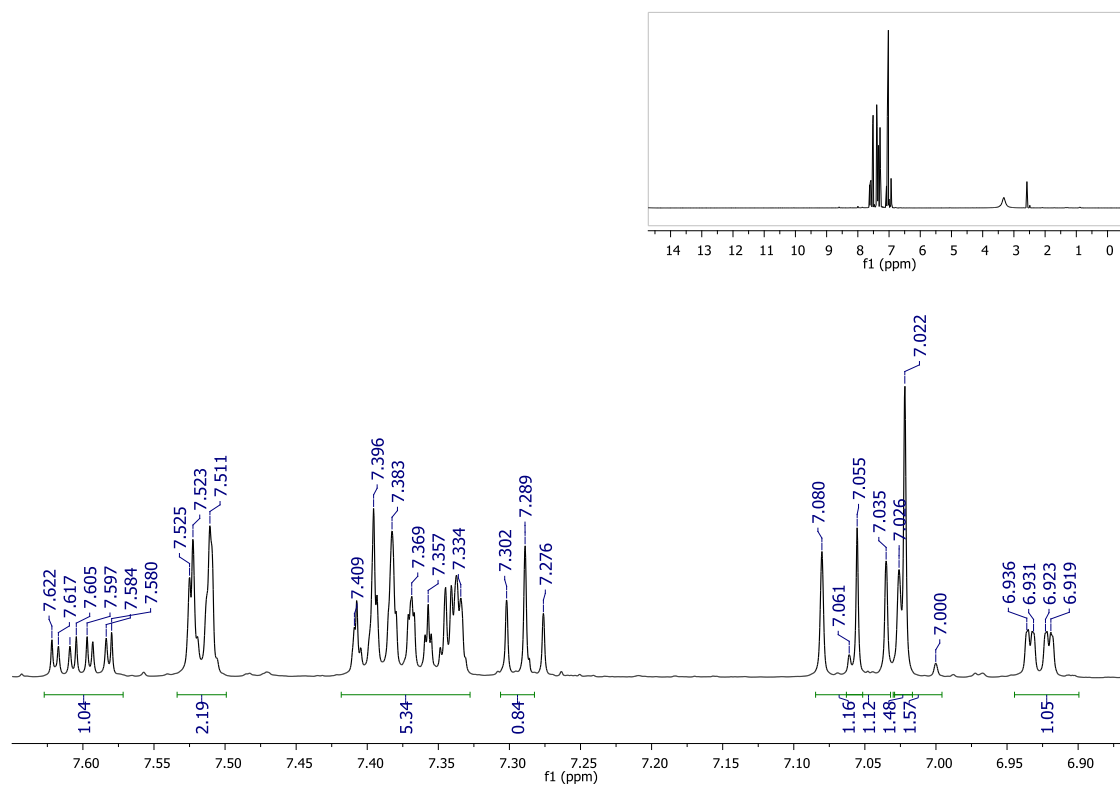
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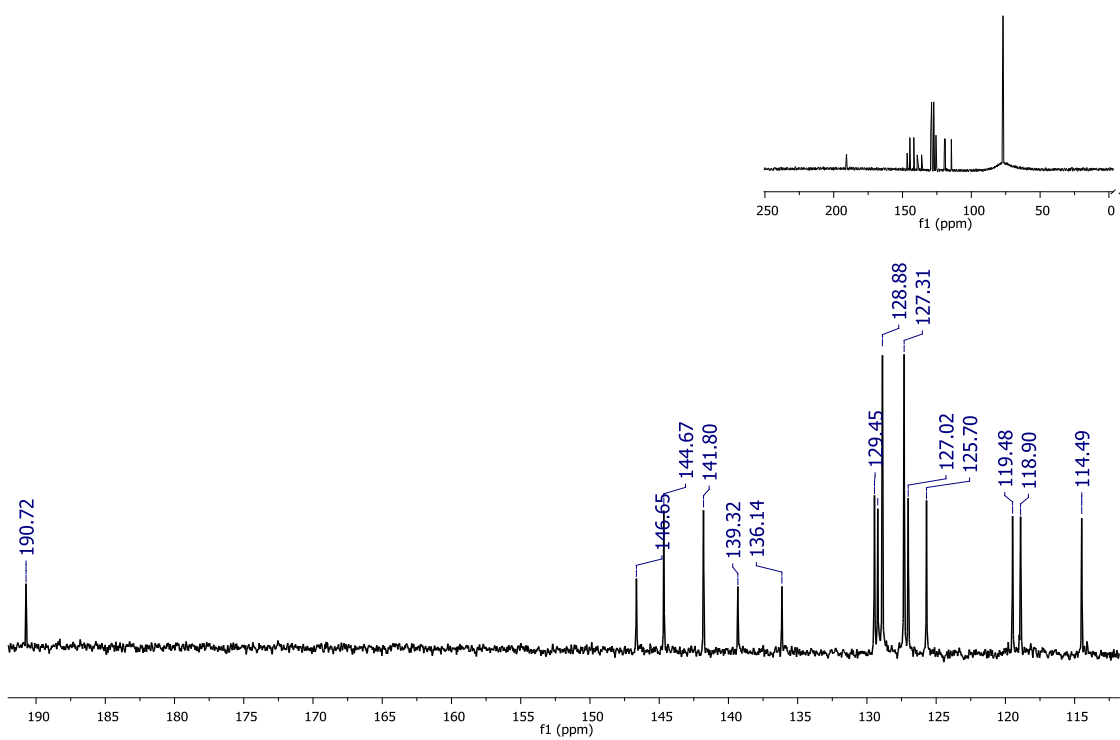
354 **Figure S4. i)** ^1H NMR spectrum of cinnamylideneacetophenone **5**



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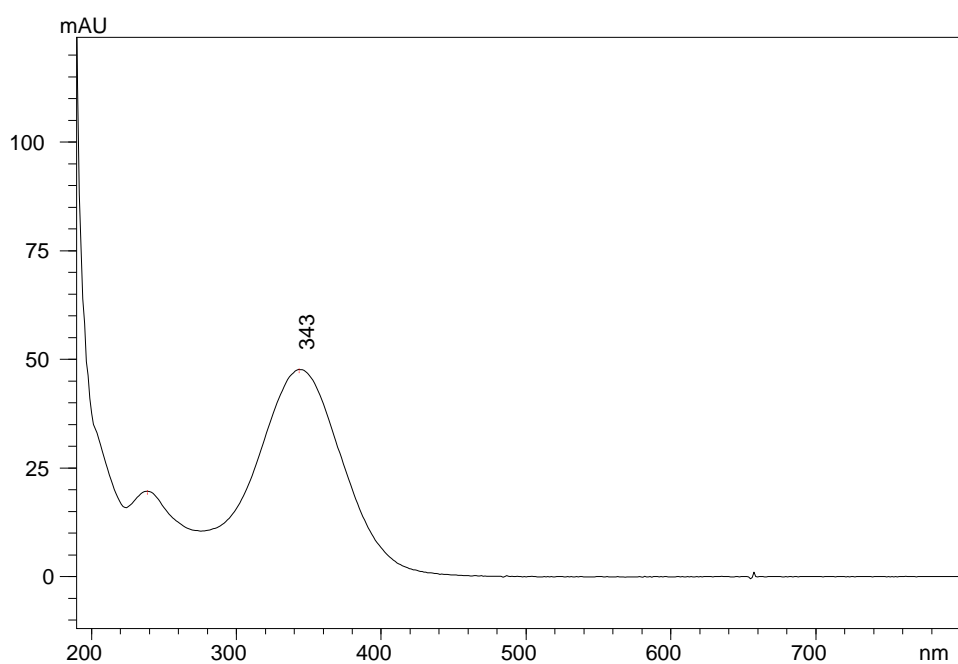
357 **Figure S4. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **5**



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360 **Figure S4. iii)** UV-Vis spectrum of cinnamylideneacetophenone **5**, MeOH/H₂O (3:1)

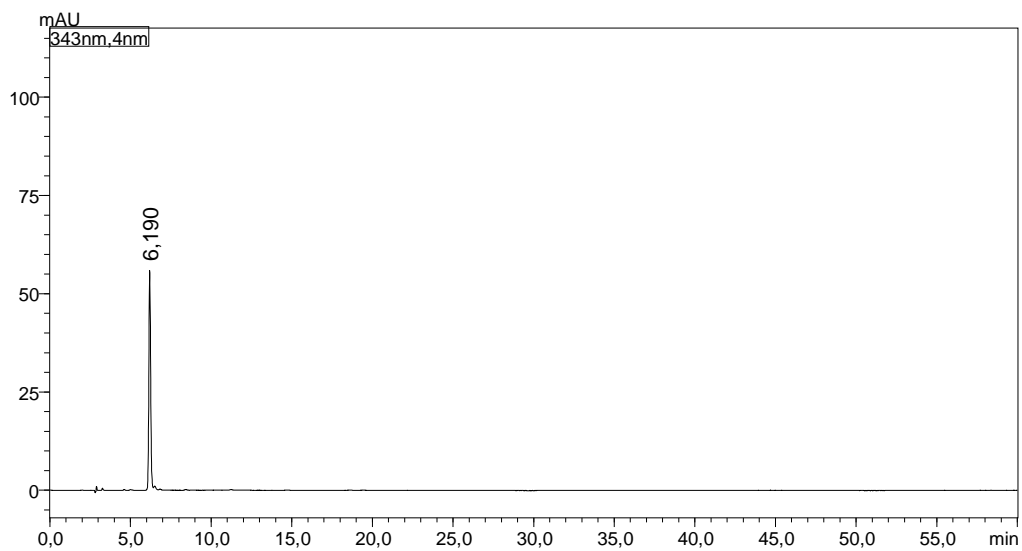


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364 **Figure S4. iv)** HPLC chromatogram of cinnamylideneacetophenone **5**



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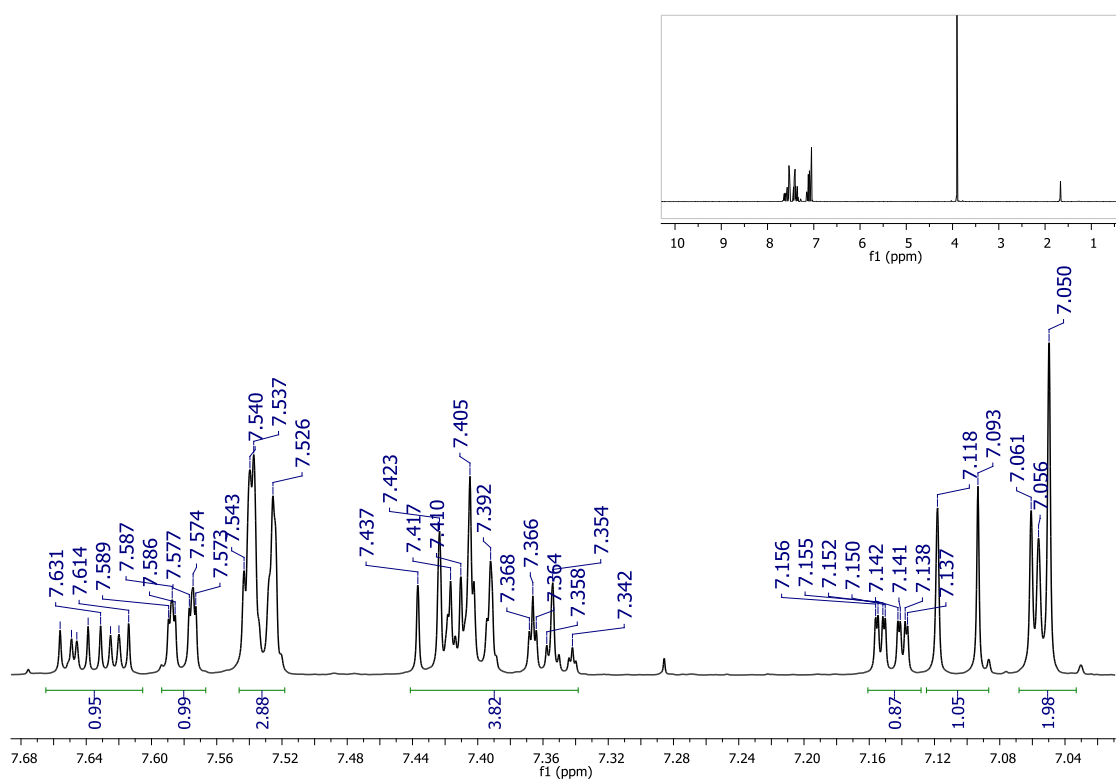
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370 **Figure S5.** ^1H NMR spectrum of cinnamylideneacetophenone **6**

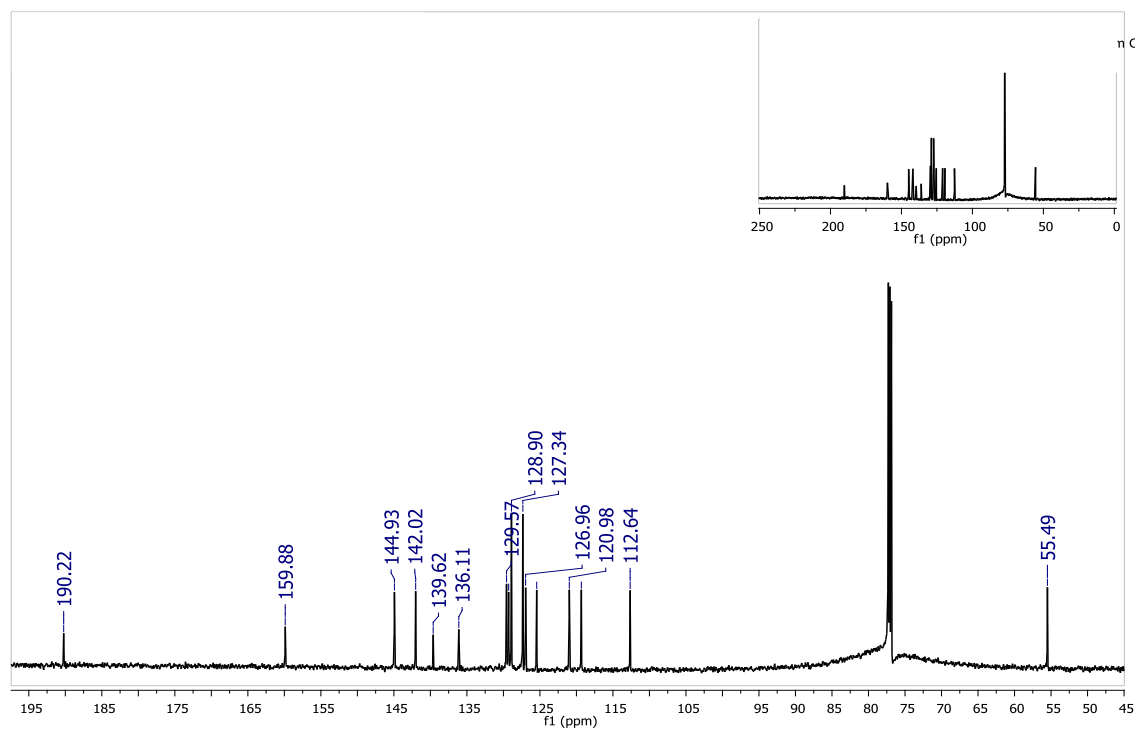


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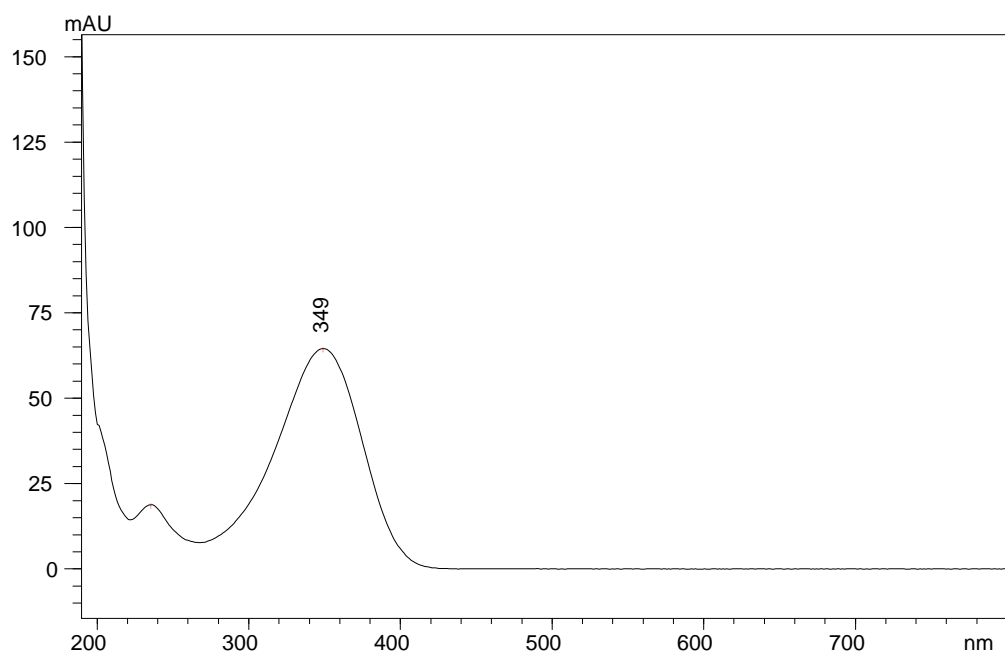
373

374 **Figure S5. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **6**



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376 **Figure S5. iii)** UV-Vis spectrum of cinnamylideneacetophenone **6**, MeOH/H₂O (3:1)



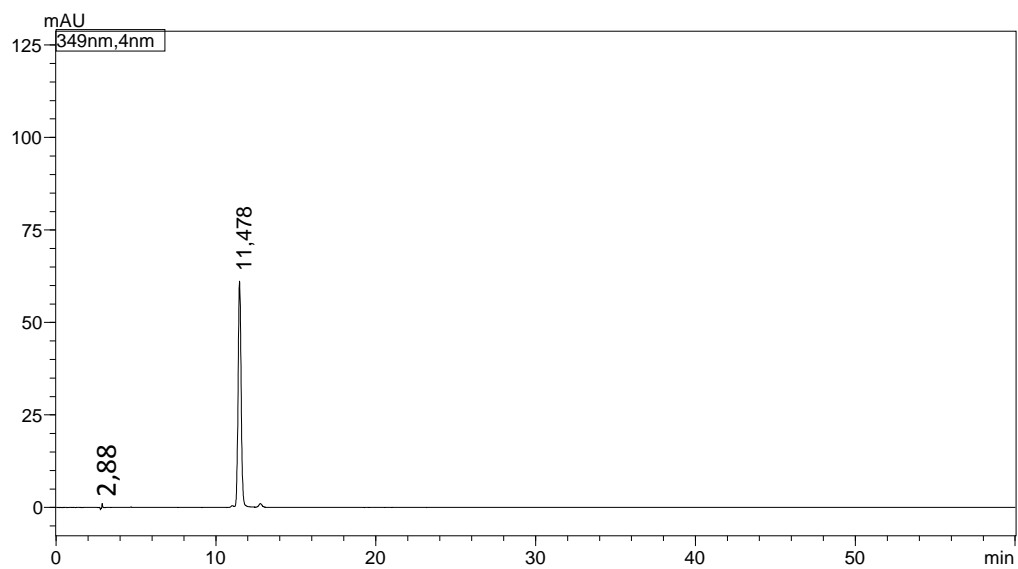
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381 **Figure S5. iv)** HPLC chromatogram of cinnamylideneacetophenone **6**



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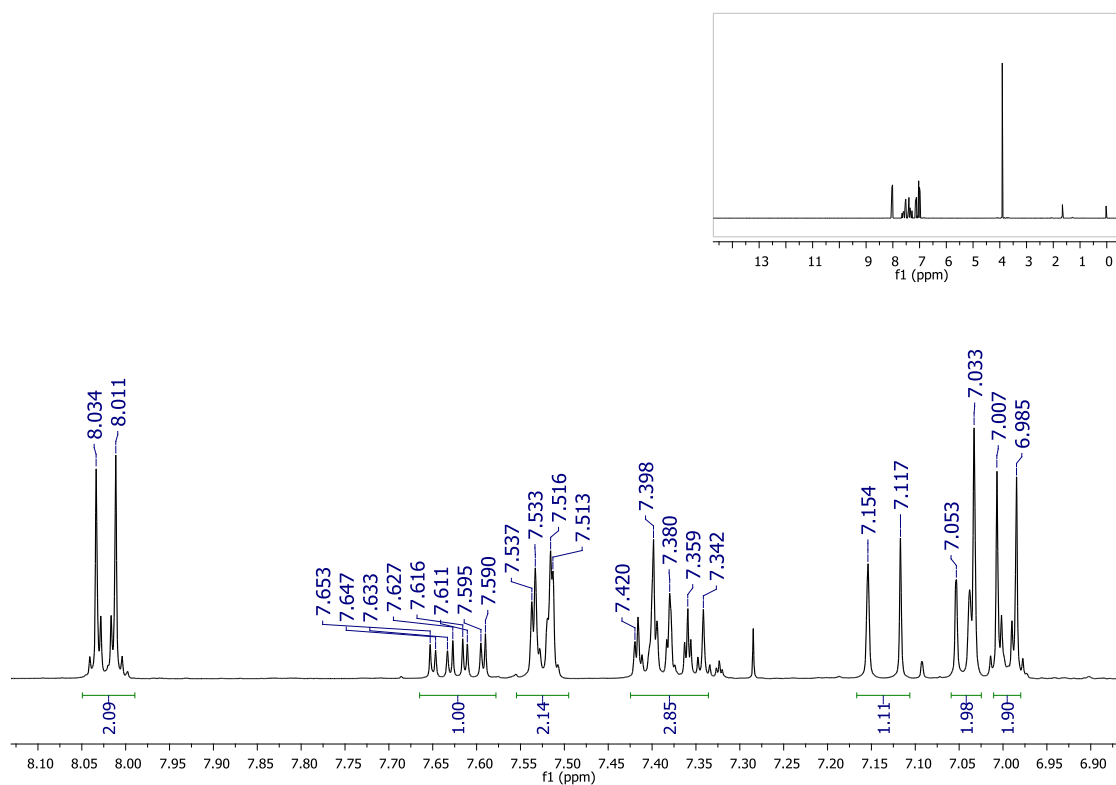
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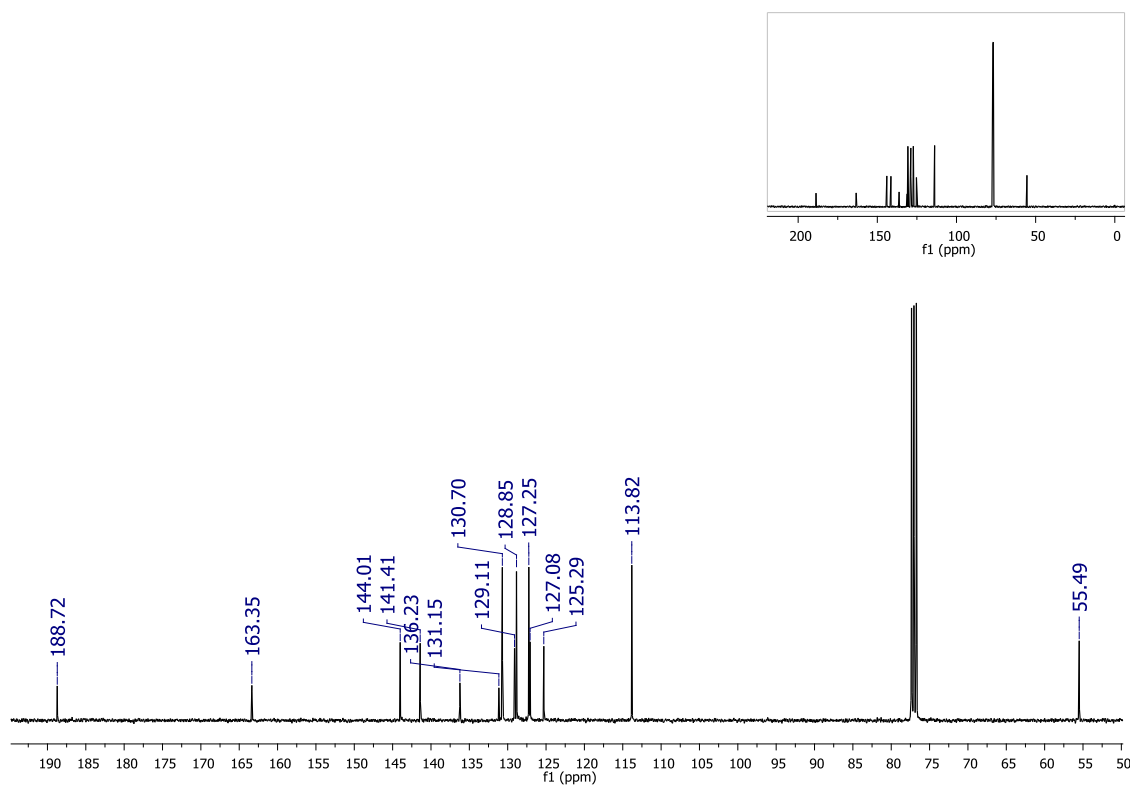
387 **Figure S6. i)** ^1H NMR spectrum of cinnamylideneacetophenone **7**



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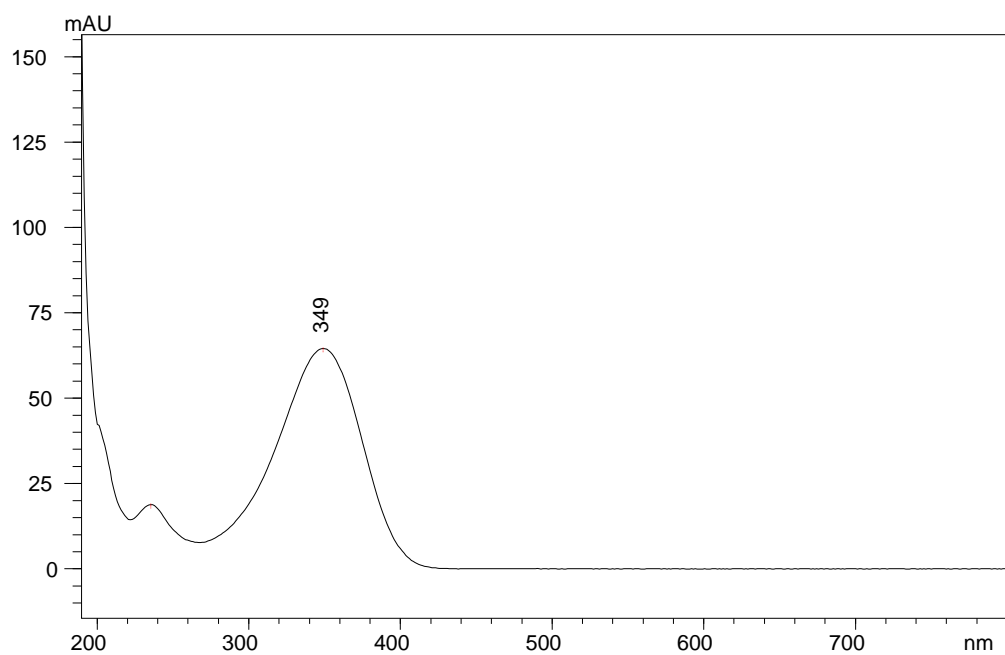
389

390 **Figure S6. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **7**



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392 **Figure S6. iii)** UV-Vis spectrum of cinnamylideneacetophenone **7**, MeOH/H₂O (3:1)



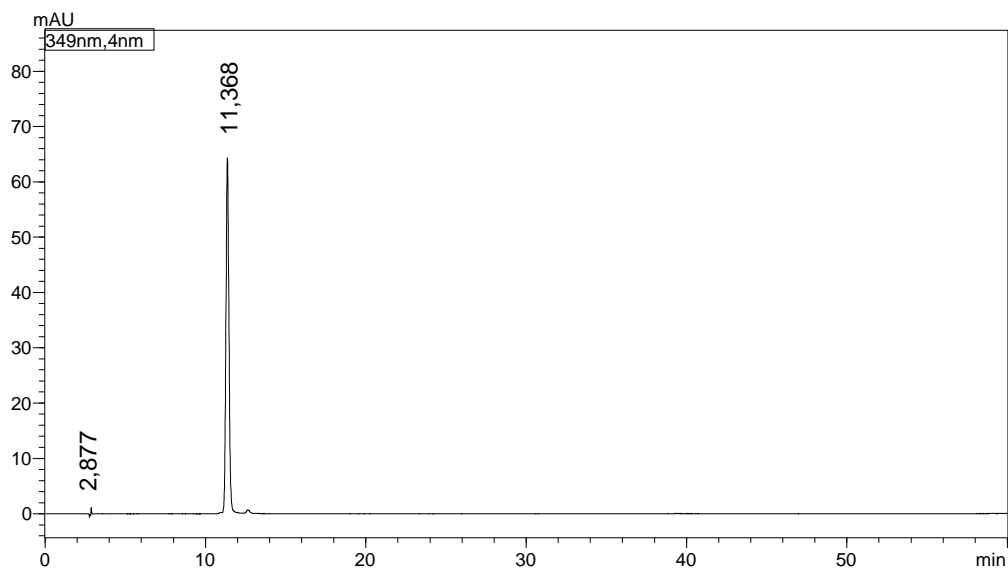
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397 **Figure S6. iv)** HPLC chromatogram of cinnamylideneacetophenone **7**



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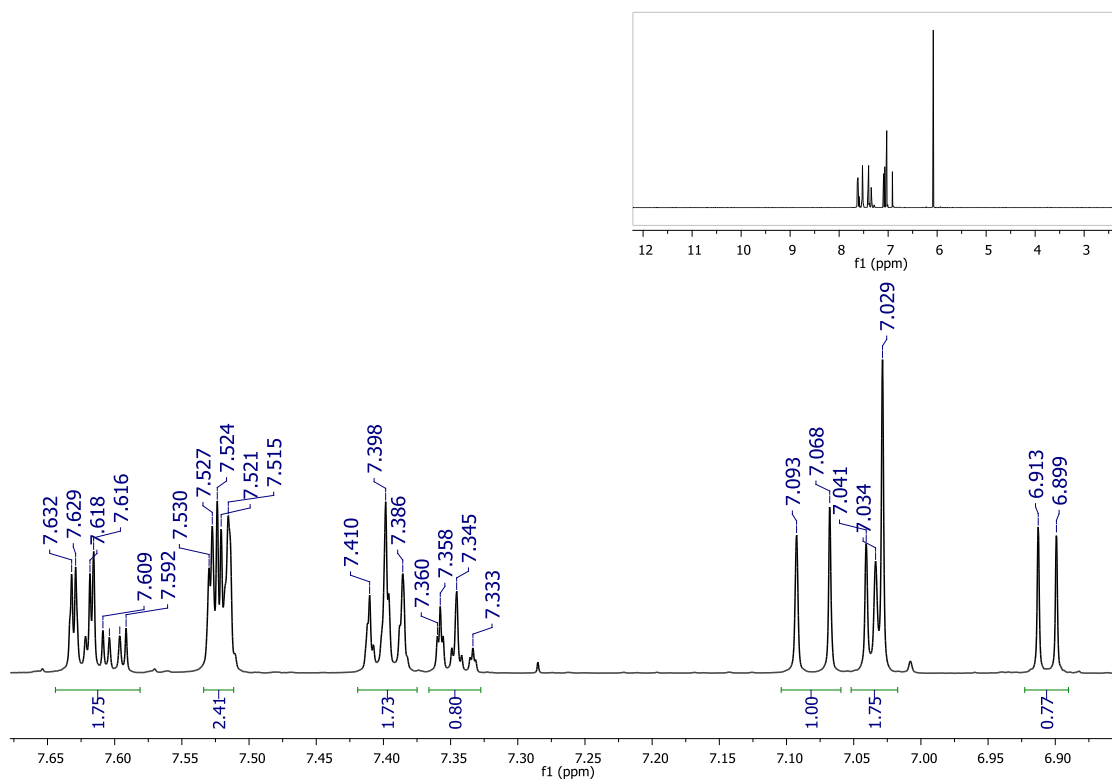
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404 **Figure S7. i)** ^1H NMR spectrum of cinnamylideneacetophenone **8**

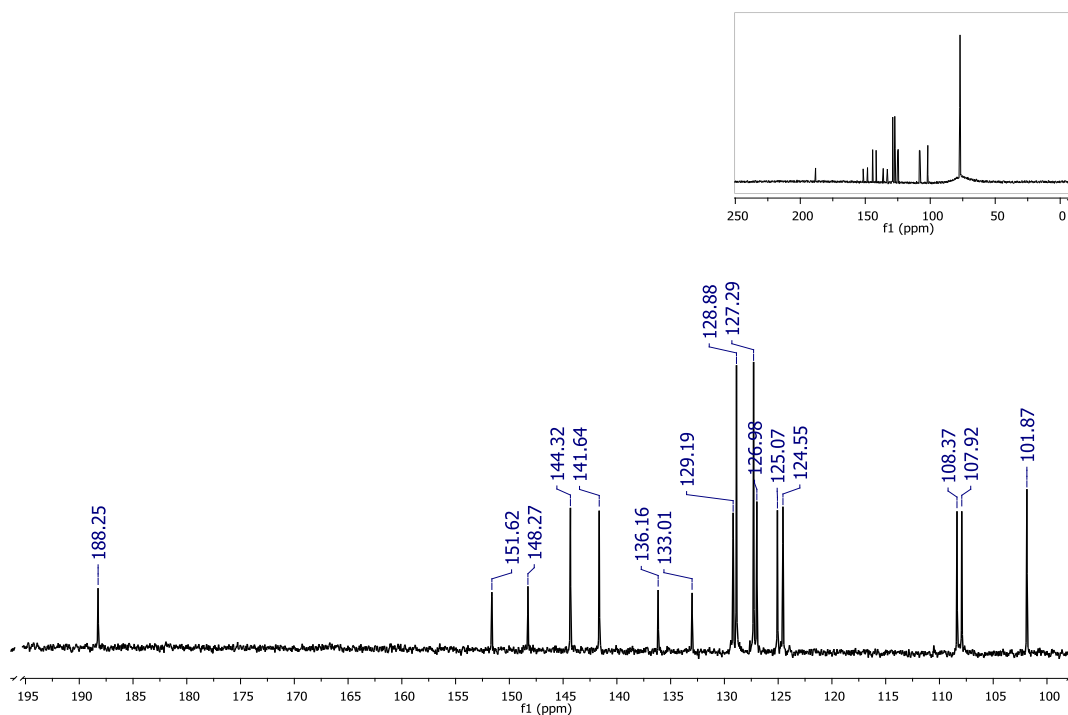


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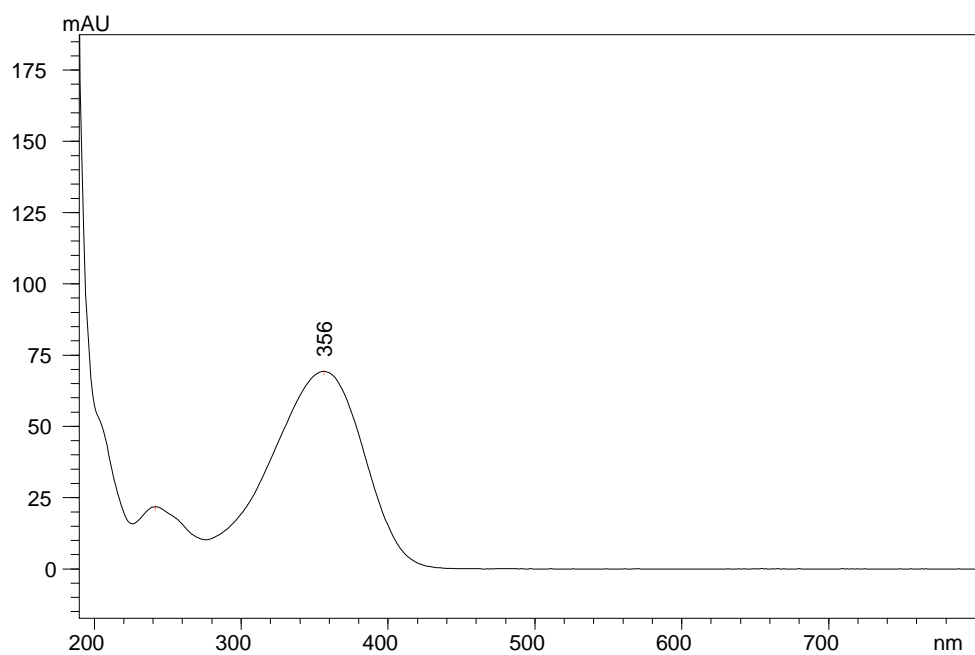
407

408 **Figure S7. ii)** ^{13}C -NMR spectrum of cinnamylideneacetophenone **8**



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410 **Figure S7. iii)** UV-Vis spectrum of cinnamylideneacetophenone **8**, MeOH/H₂O (3:1)



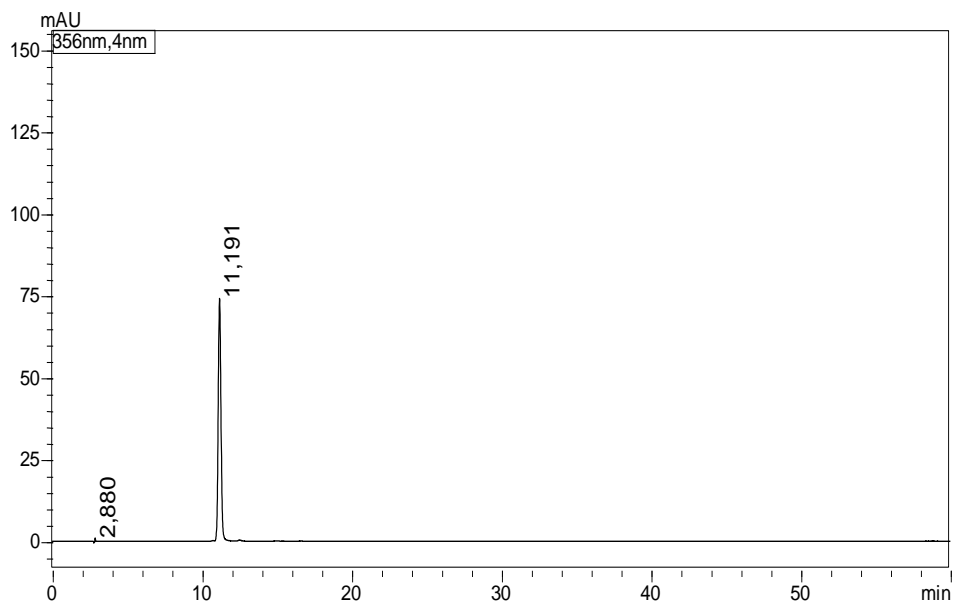
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415 **Figure S7. iv)** HPLC chromatogram of cinnamylideneacetophenone **8**



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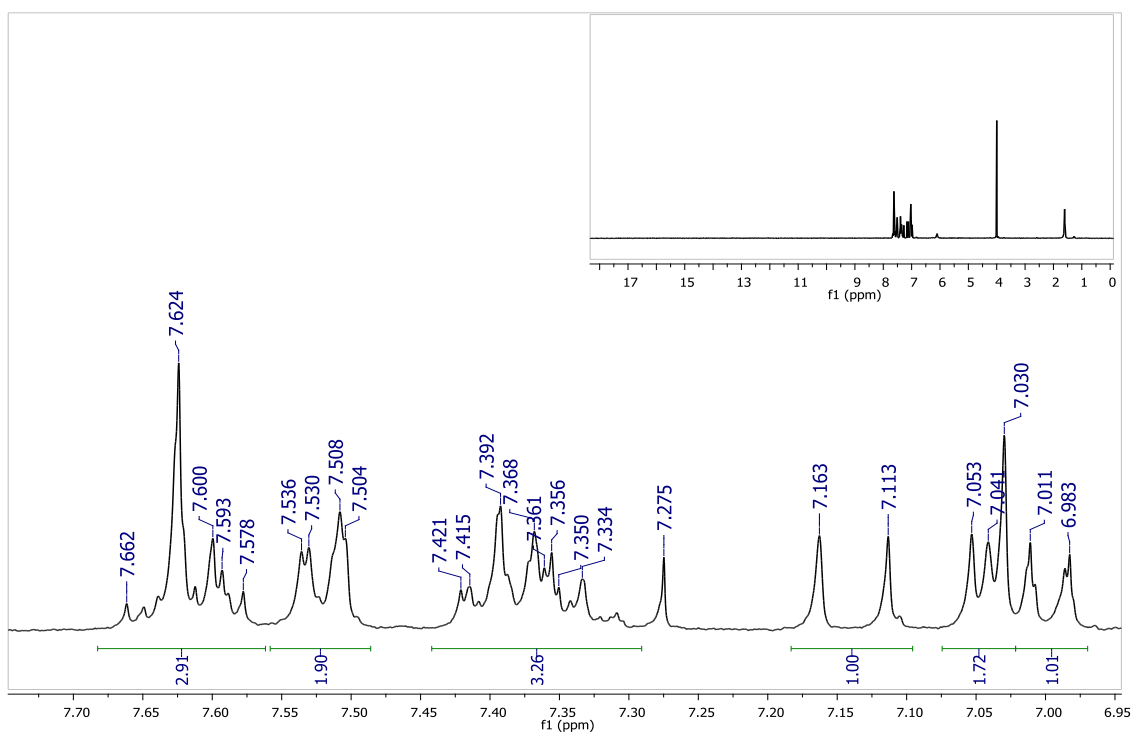
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422 **Figure S8. i)** ^1H NMR spectrum of cinnamylideneacetophenone **9**

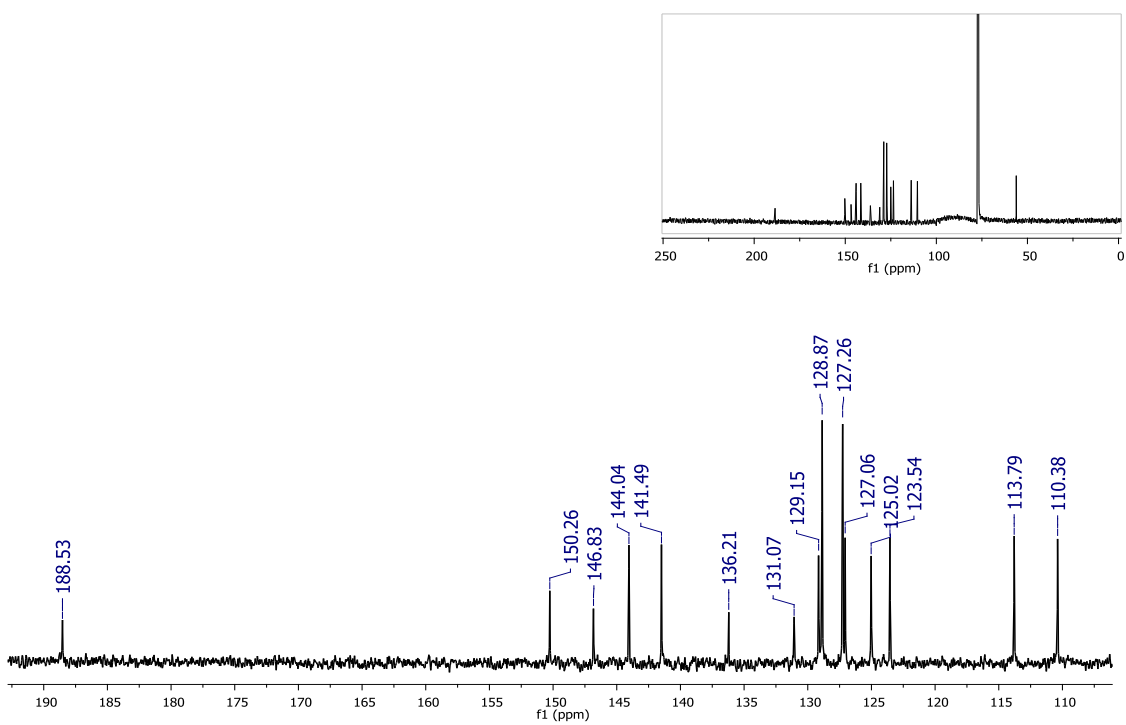


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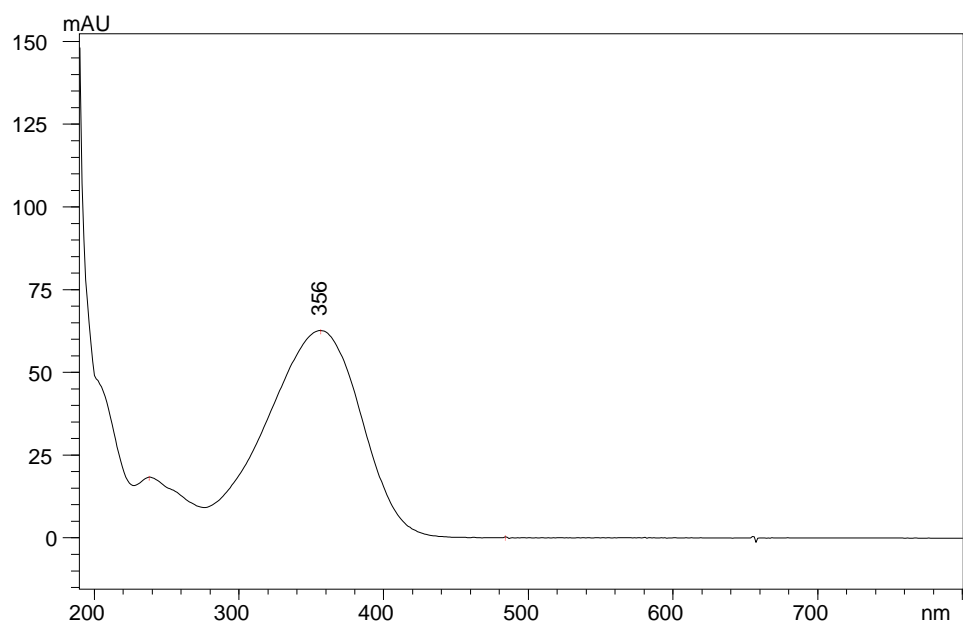
426 **Figure S8. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **9**



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429 **Figure S8. iii)** UV-Vis spectrum of cinnamylideneacetophenone **9**, MeOH/H₂O (3:1)



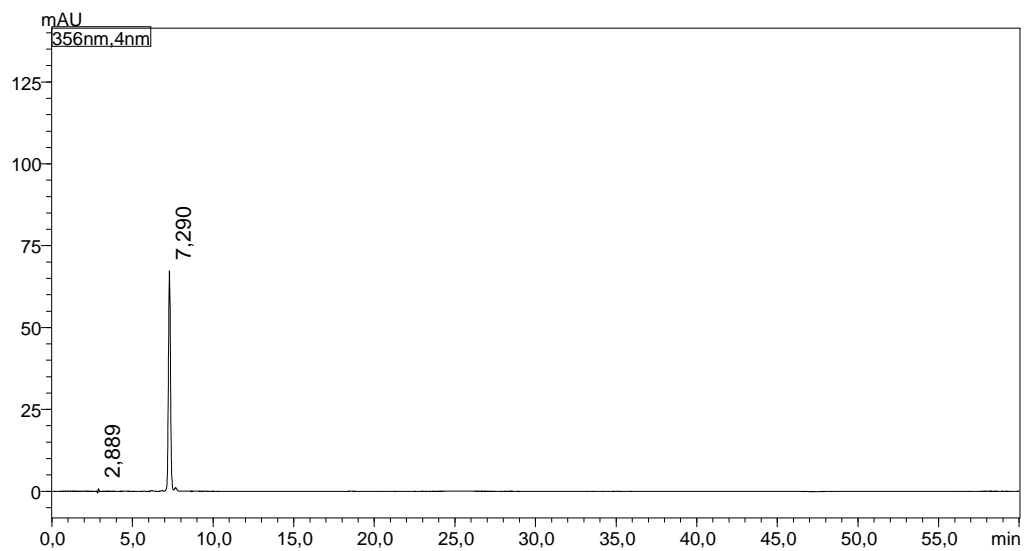
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434 **Figure S8. iv)** HPLC chromatogram of cinnamylideneacetophenone **9**



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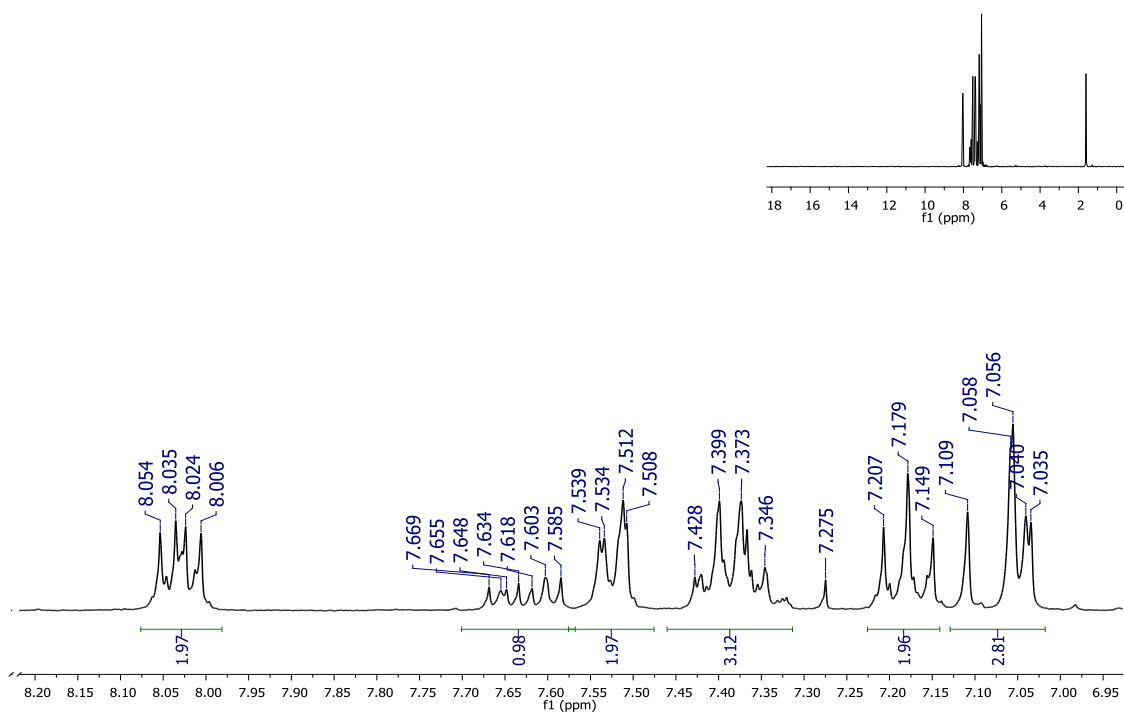
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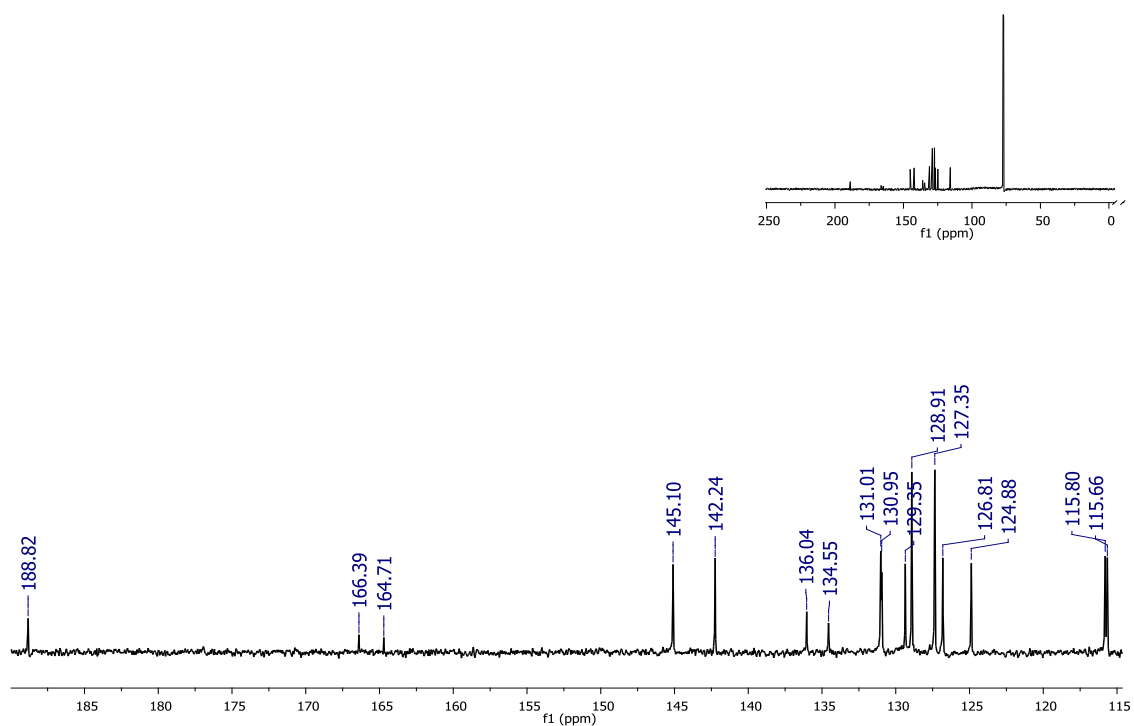
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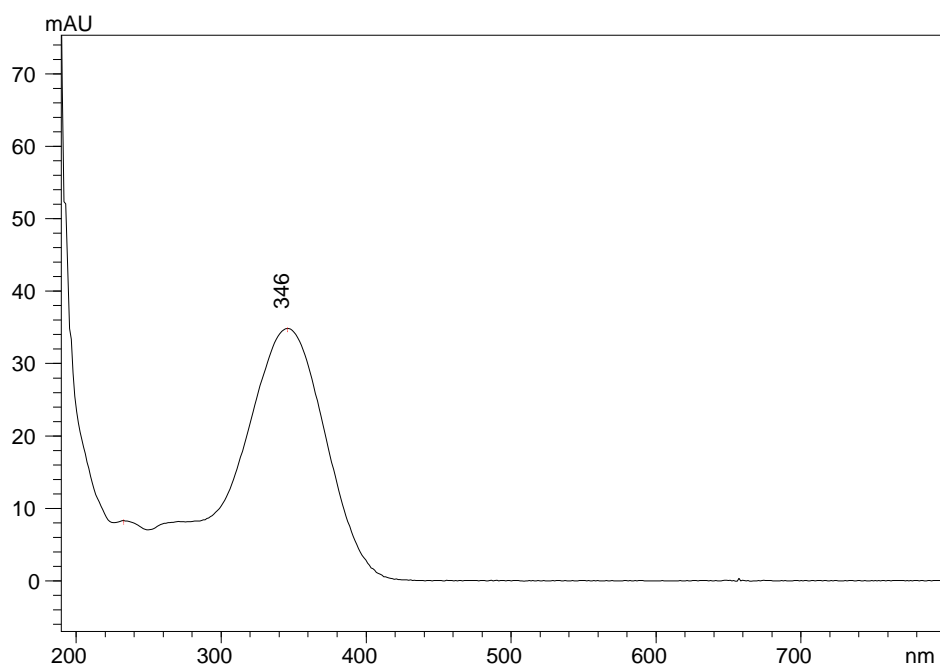
441 **Figure S9. i)** ^1H NMR spectrum of cinnamylideneacetophenone **10**



444 **Figure S9. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **10**



448 **Figure S9.** iii) UV-Vis spectrum of cinnamylideneacetophenone **10**, MeOH/H₂O (3:1)



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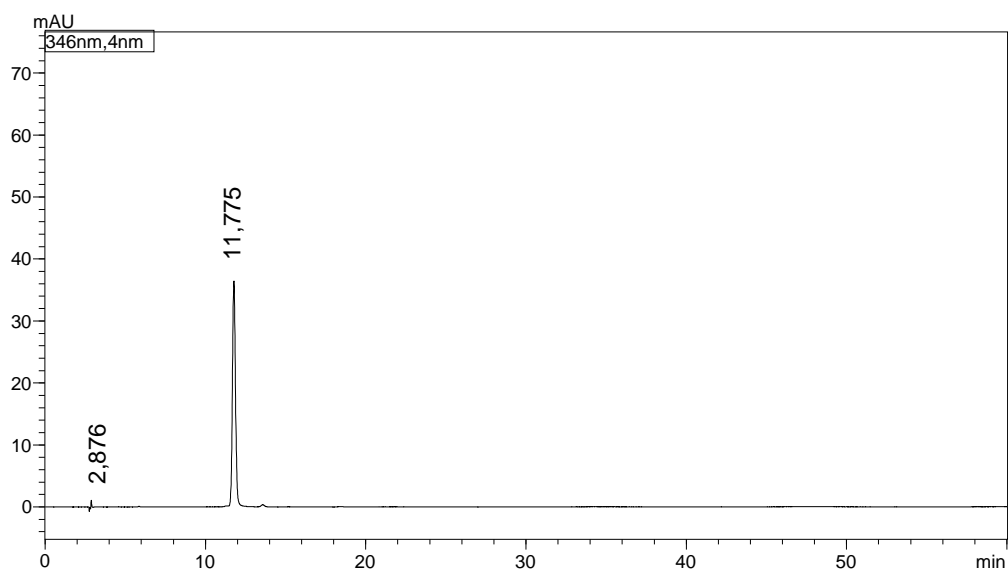
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454 **Figure S9.** iv) HPLC chromatogram of cinnamylideneacetophenone **10**



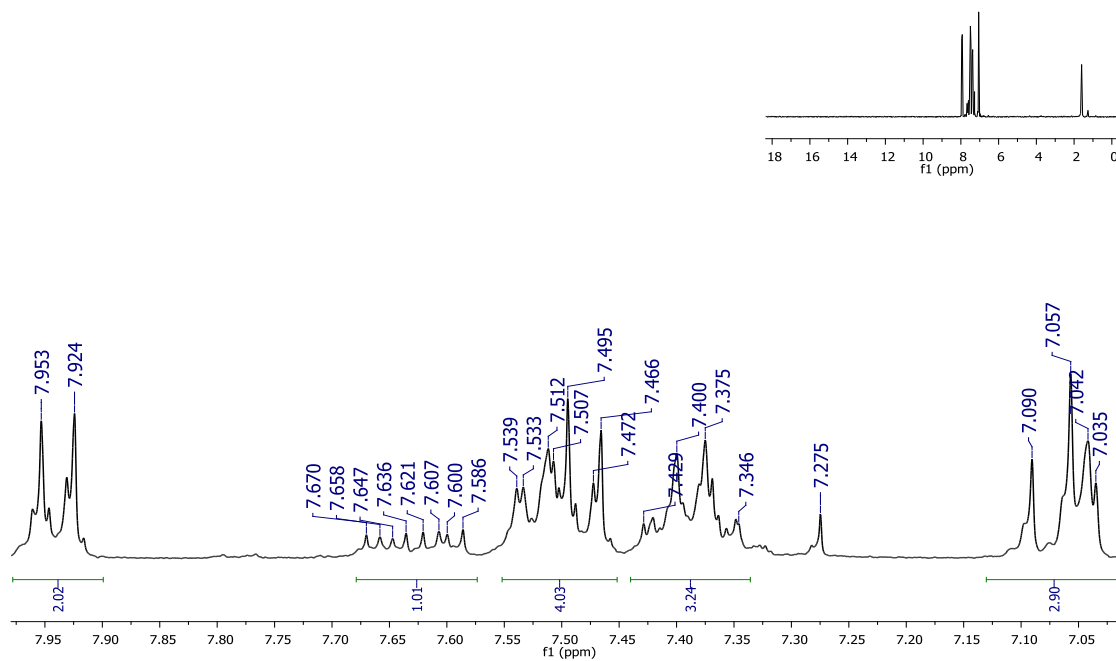
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459 **Figure S10. i)** ^1H NMR spectrum of cinnamylideneacetophenone **11**

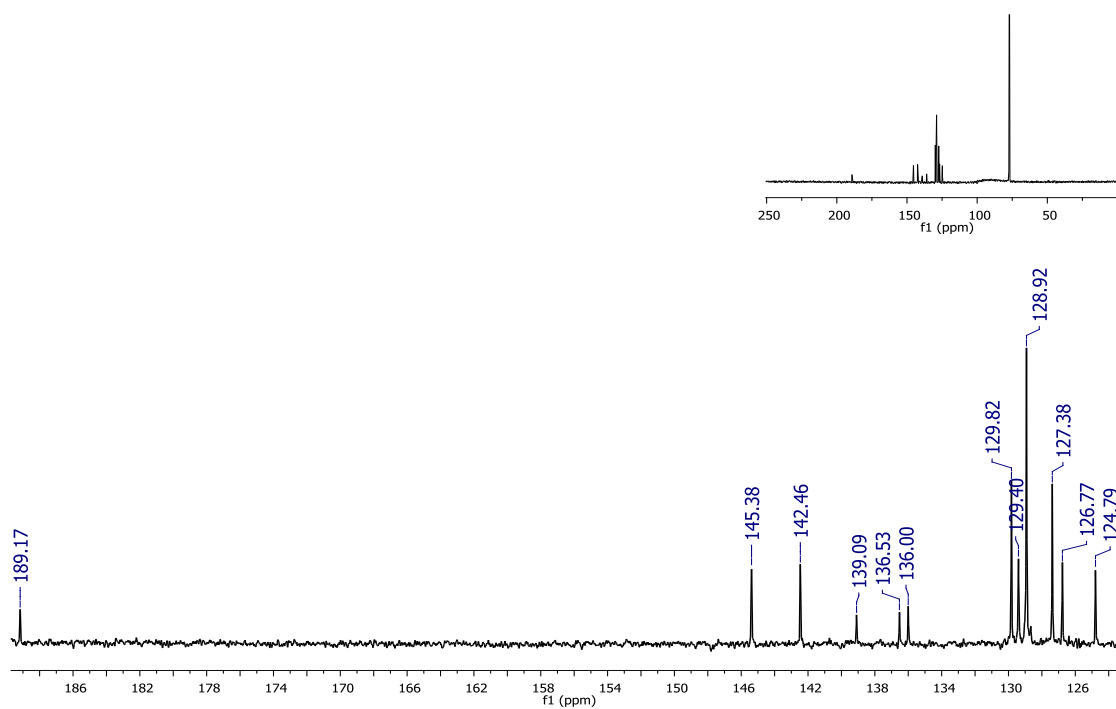


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463 **Figure S10. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **11**



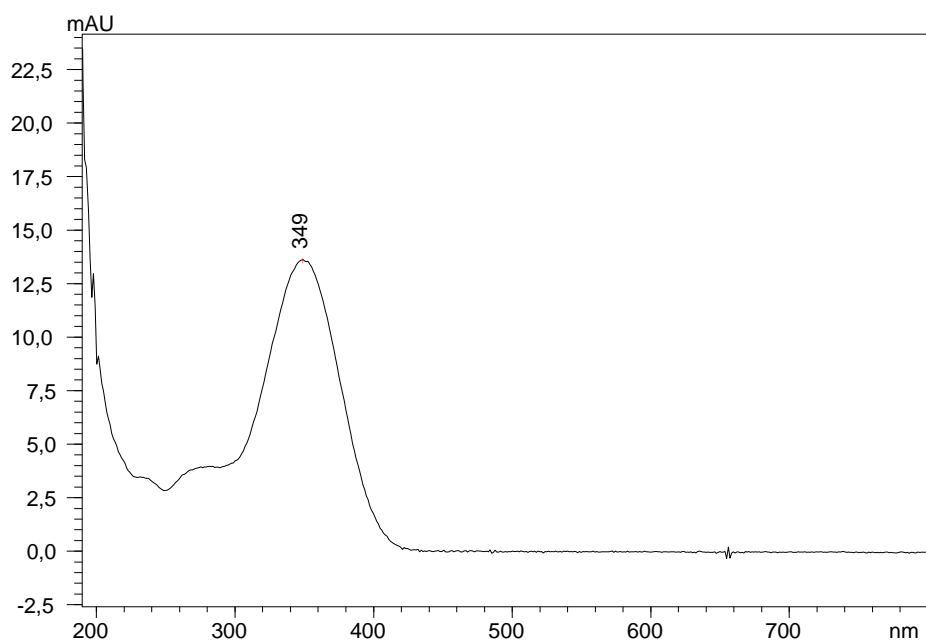
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468 **Figure S10. iii)** UV-Vis spectrum of cinnamylideneacetophenone **11**, MeOH/H₂O (3:1)



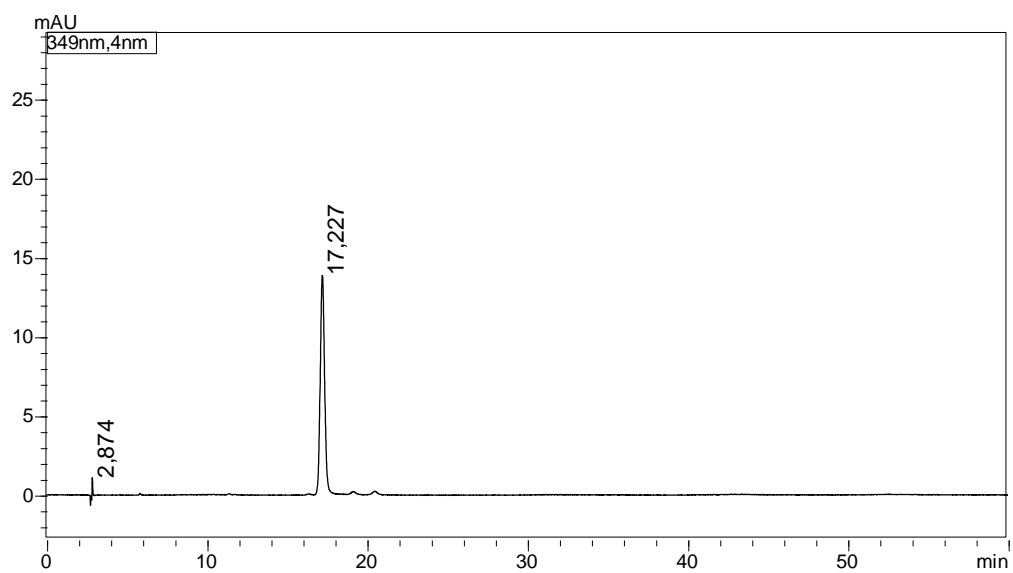
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473 **Figure S10. iv)** HPLC chromatogram of cinnamylideneacetophenone **11**



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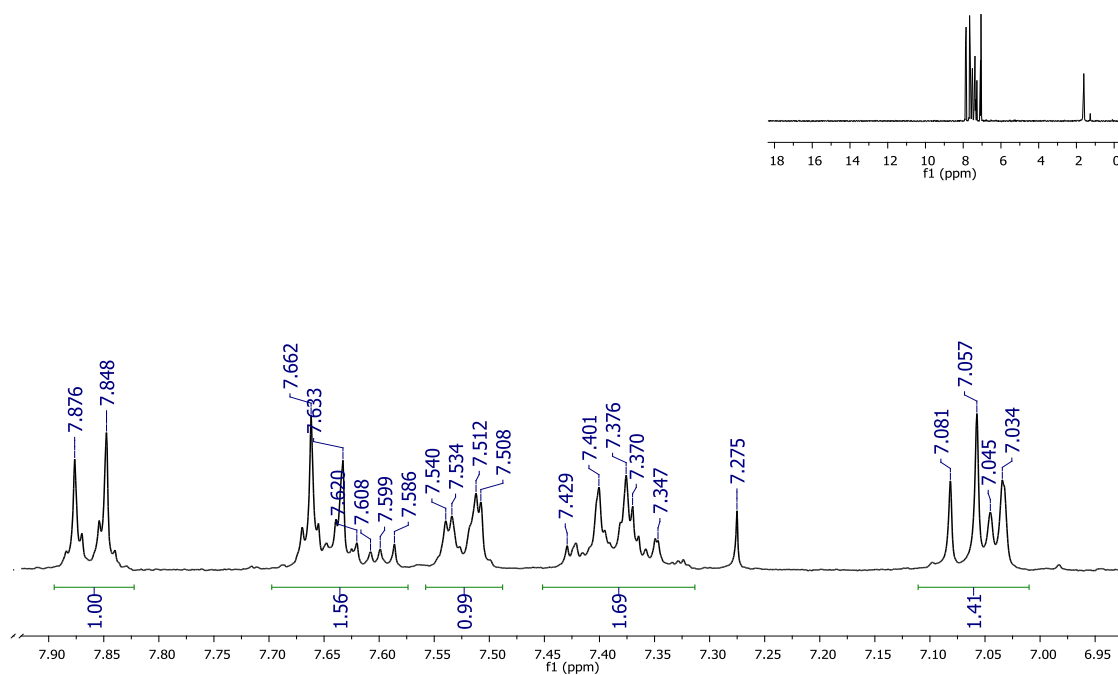
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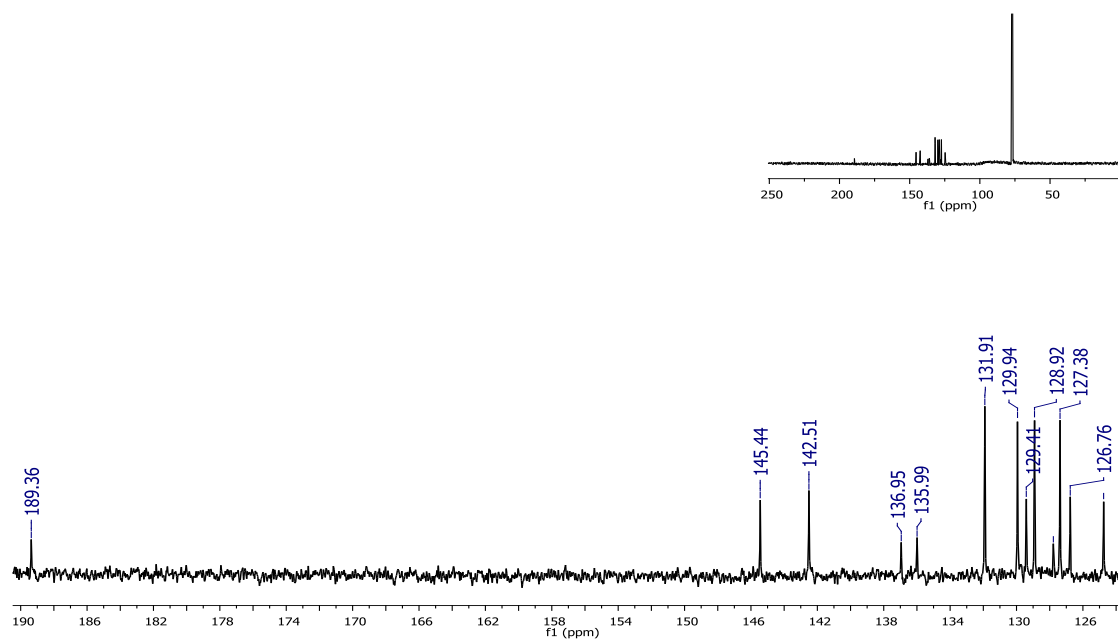
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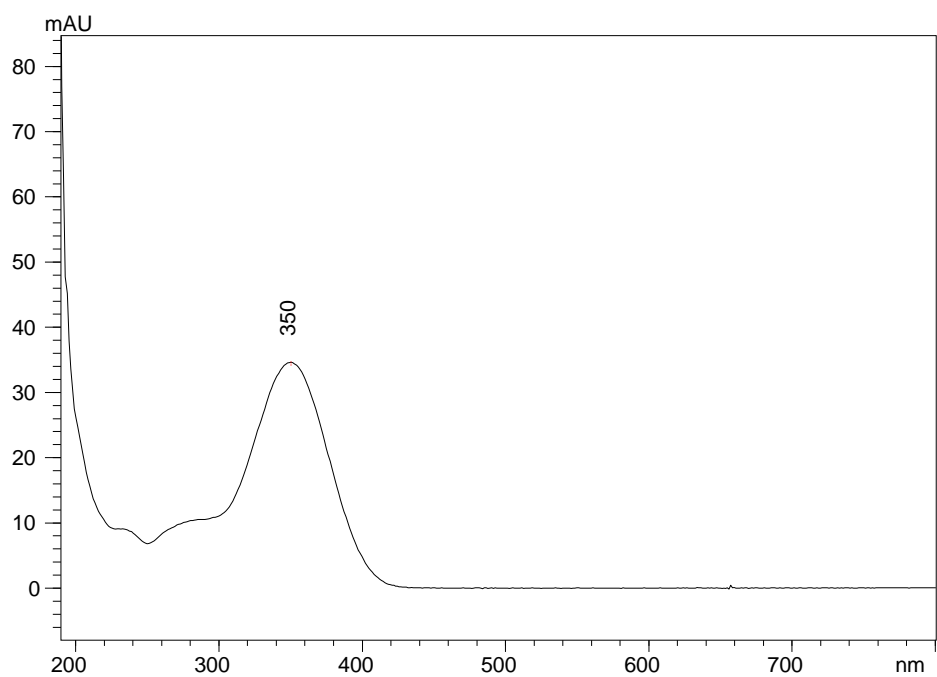
480 **Figure S11. i)** ^1H NMR spectrum of cinnamylideneacetophenone **12**



484 **Figure S11. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **12**



489 **Figure S11. iii)** UV-Vis spectrum of cinnamylideneacetophenone **12**, MeOH/H₂O (3:1)



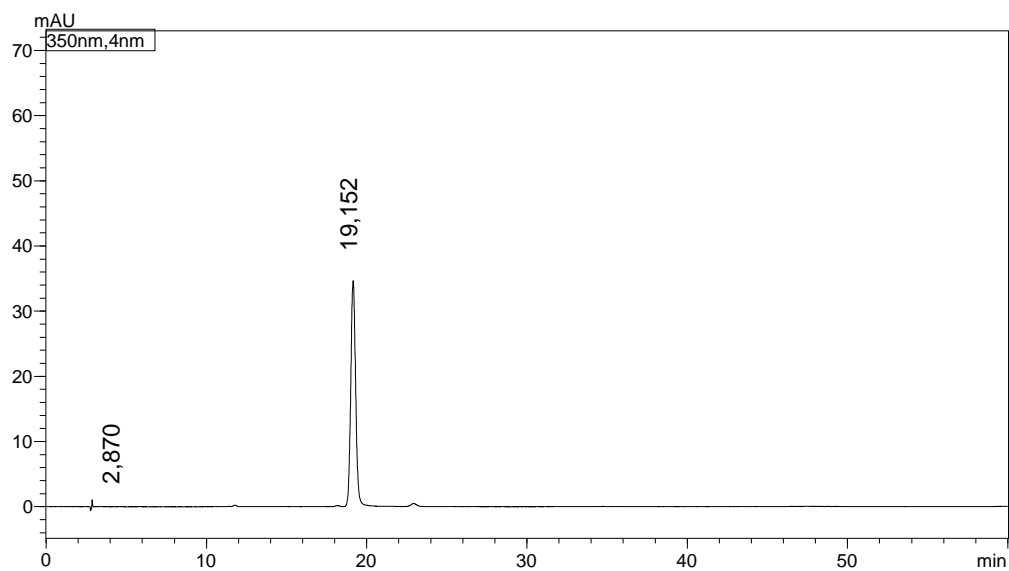
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494 **Figure S11. iv)** HPLC chromatogram of cinnamylideneacetophenone **12**



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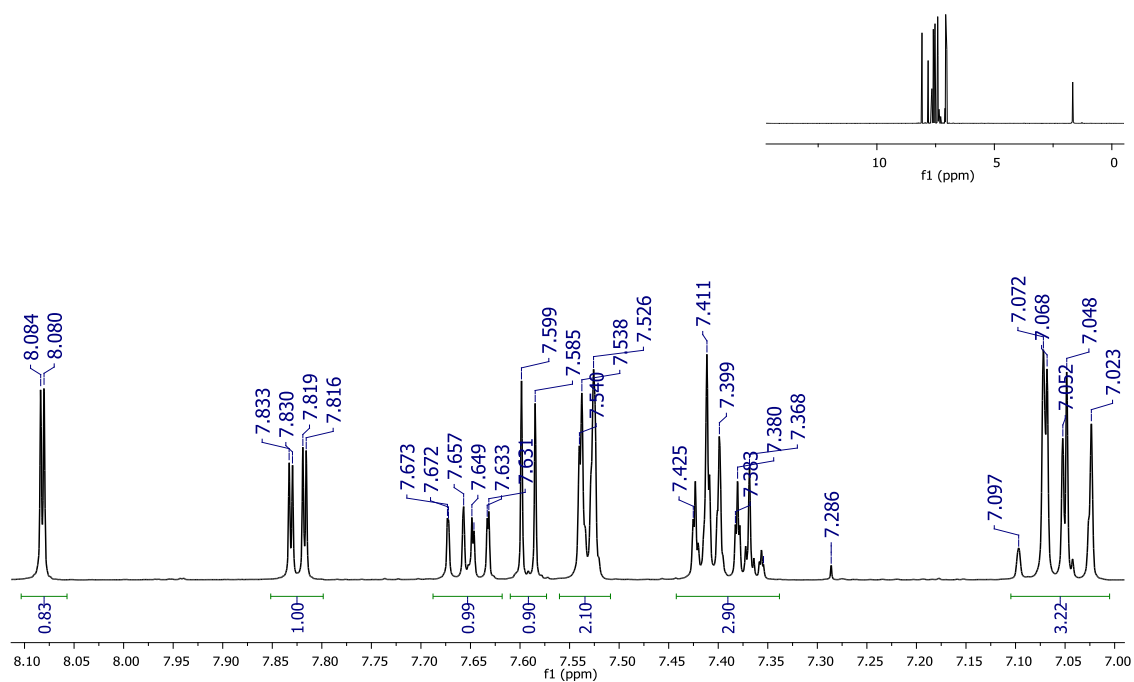
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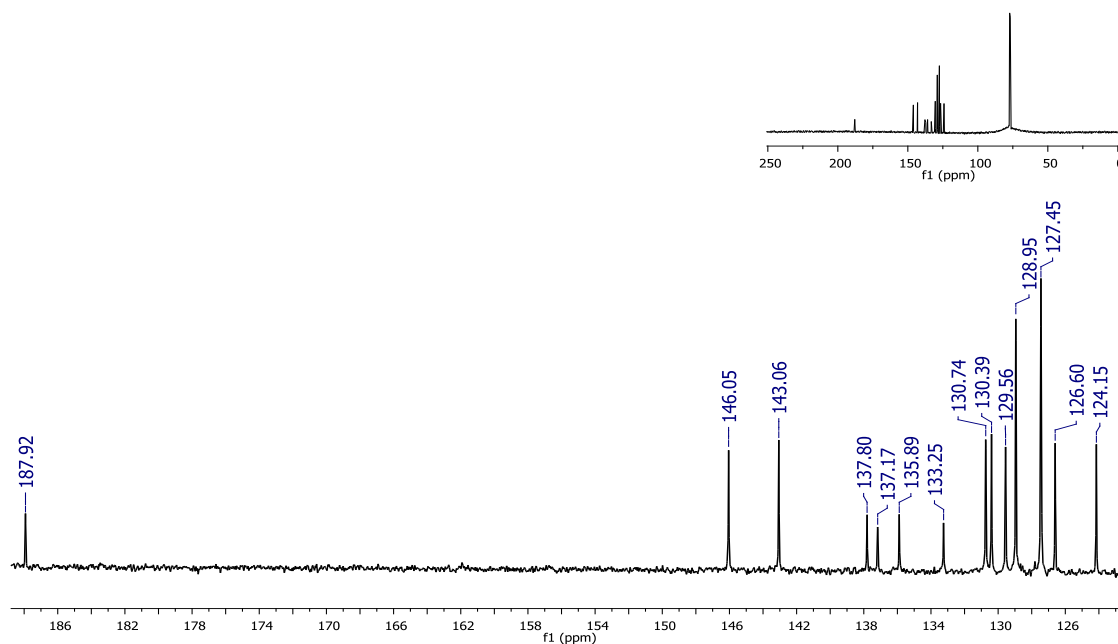
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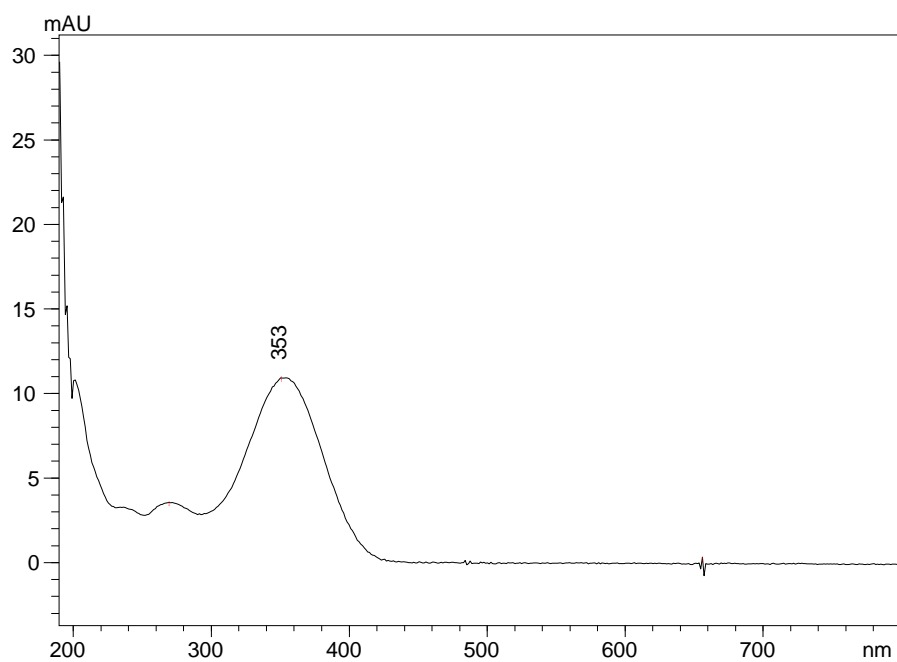
500 **Figure S12. i)** ^1H NMR spectrum of cinnamylideneacetophenone **13**



504 **Figure S12. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **13**



508 **Figure S12. iii)** UV-Vis spectrum of cinnamylideneacetophenone **13**, MeOH/H₂O (3:1)



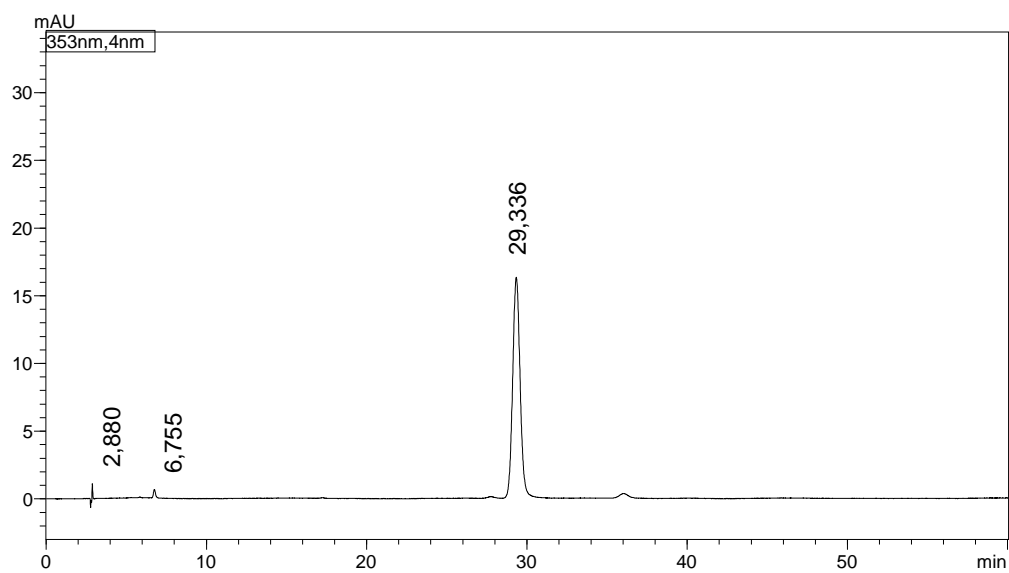
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513 **Figure S12. iv)** HPLC chromatogram of cinnamylideneacetophenone **13**



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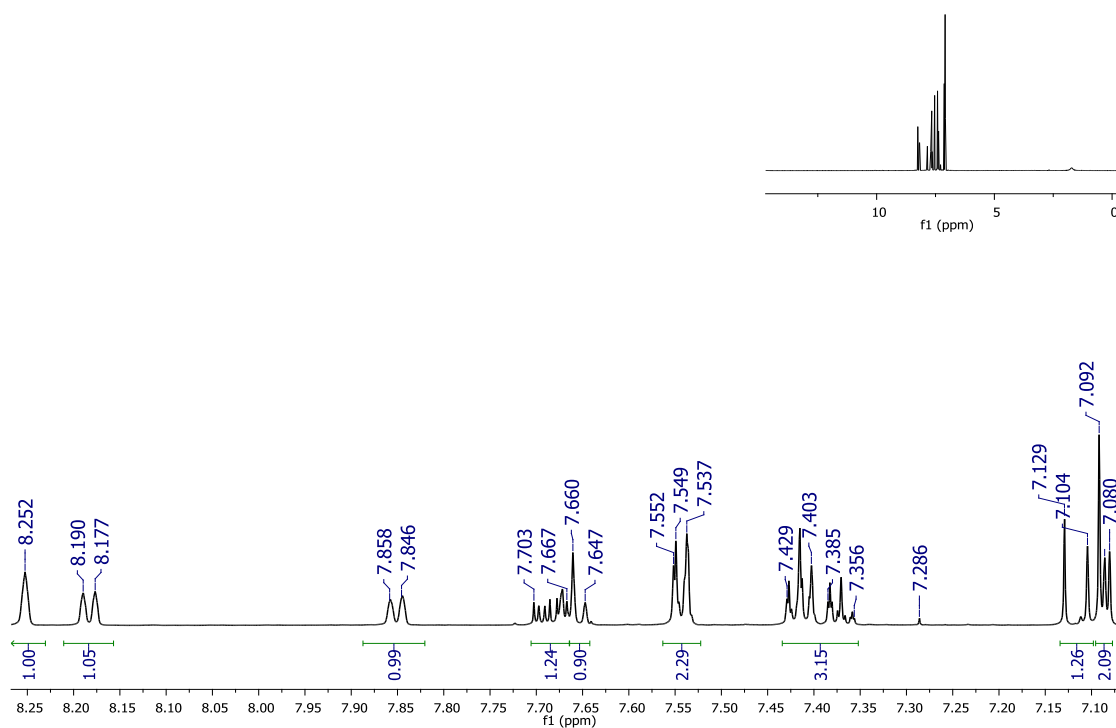
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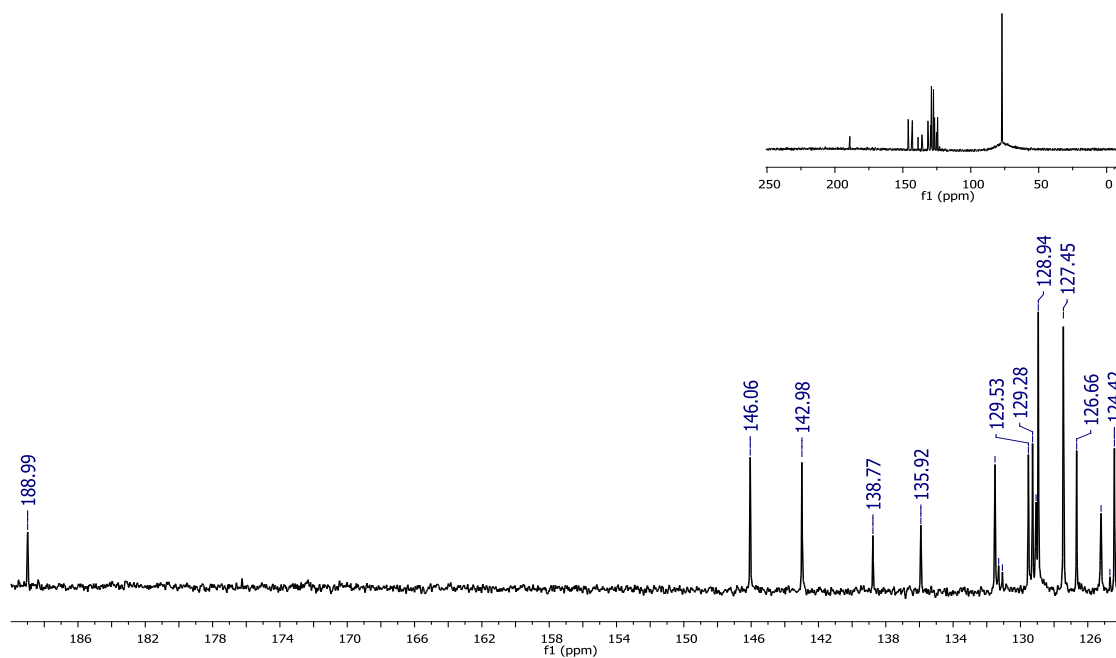
519 **Figure S13. i)** ^1H NMR spectrum of cinnamylideneacetophenone **14**



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522 **Figure S13. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **14**



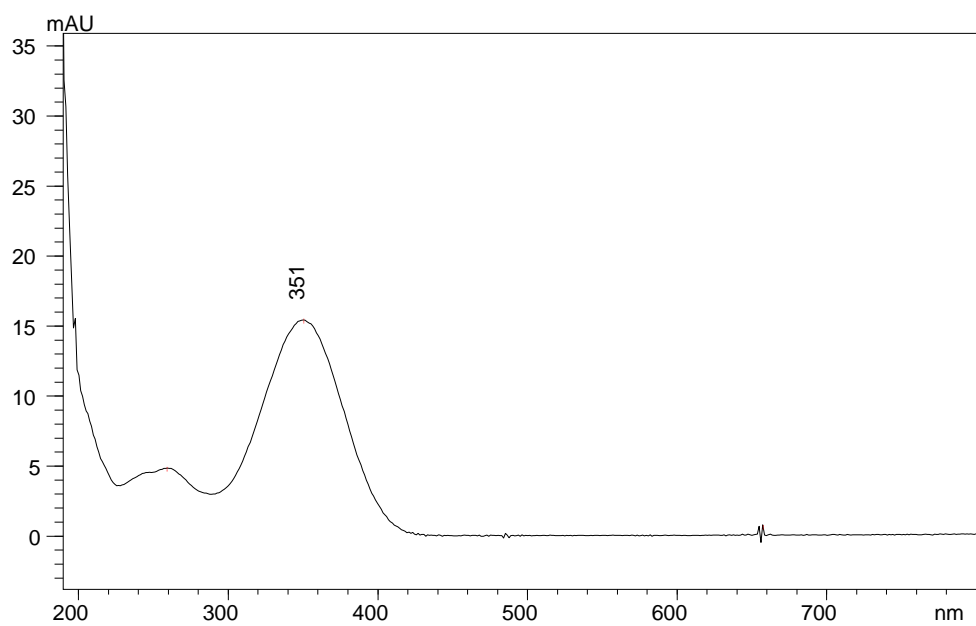
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527 **Figure S13. iii)** UV-Vis spectrum of cinnamylideneacetophenone **14**, MeOH/H₂O (3:1)



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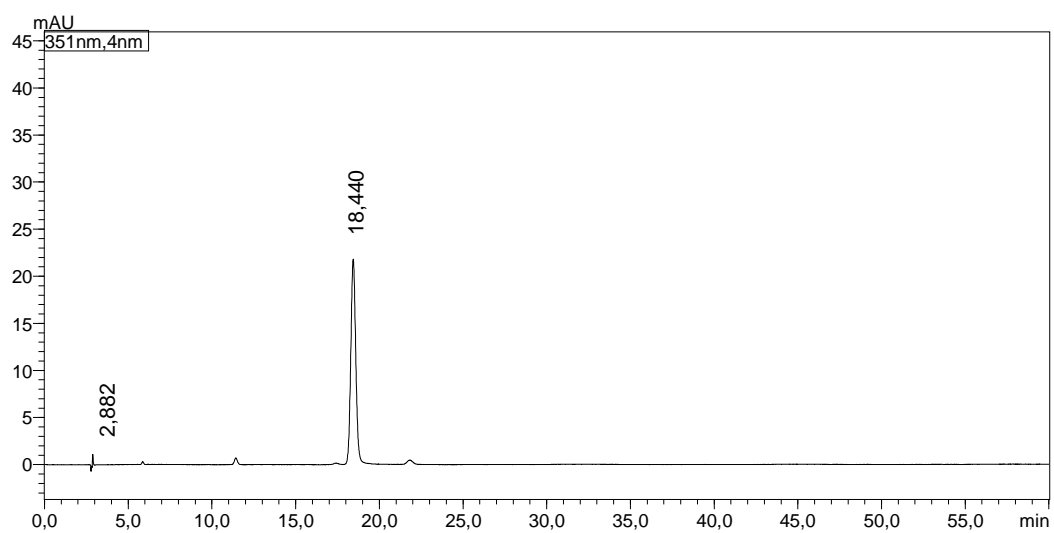
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533 **Figure S13. iv)** HPLC chromatogram of cinnamylideneacetophenone **14**



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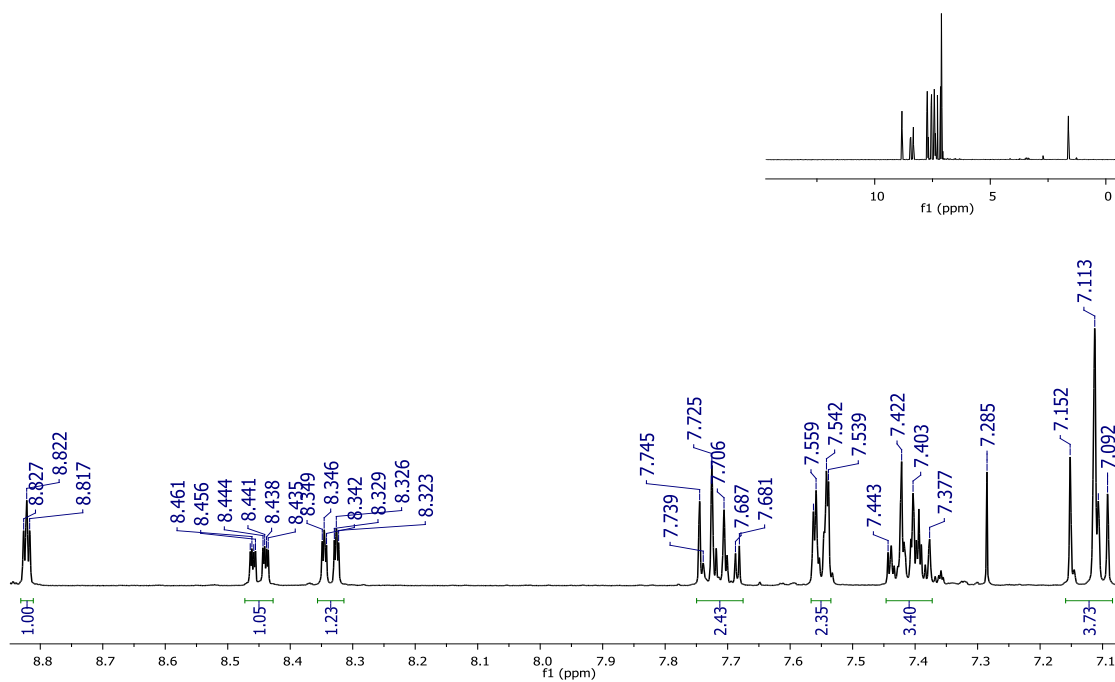
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539 **Figure S14. i)** ^1H NMR spectrum of cinnamylideneacetophenone **15**

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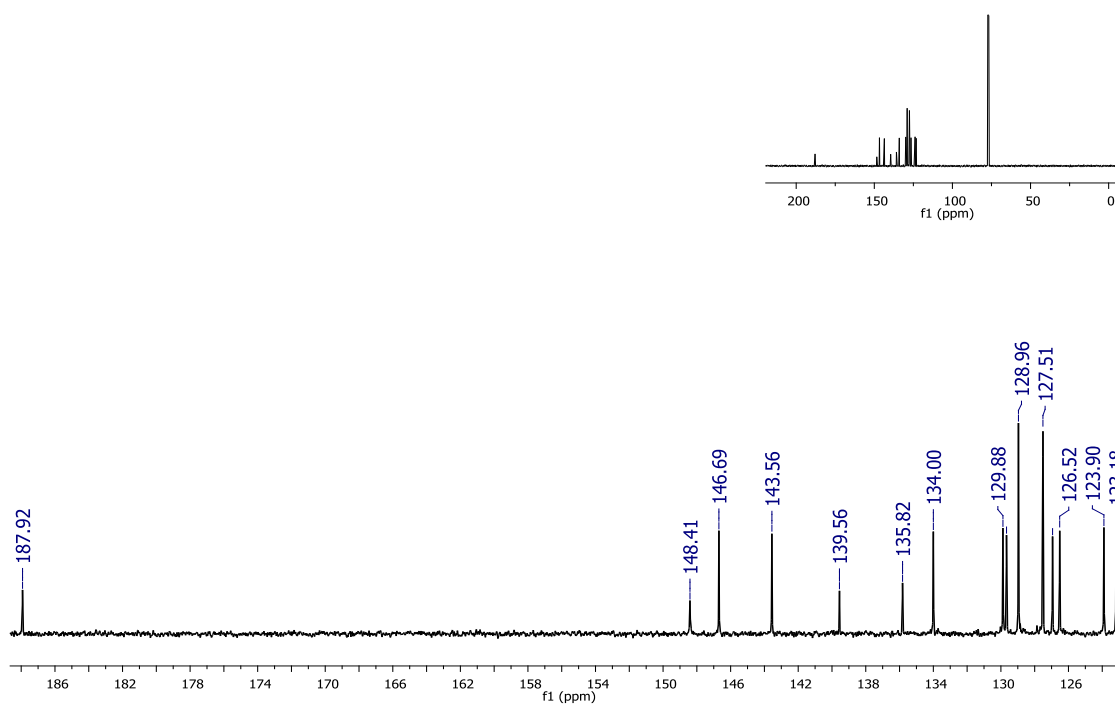
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545 **Figure S14. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **15**

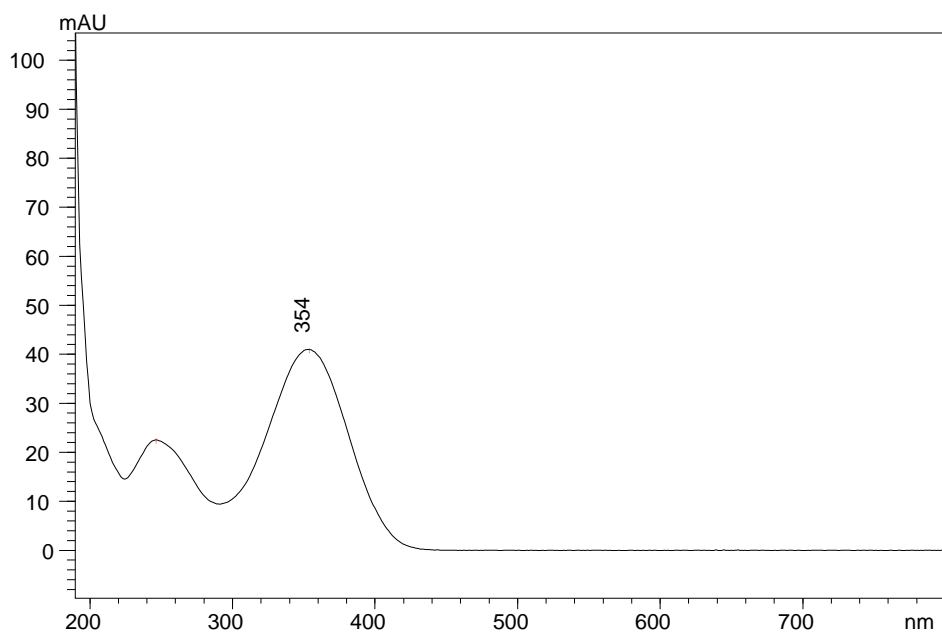


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549 **Figure S14. iii)** UV-Vis spectrum of cinnamylideneacetophenone **15**, MeOH/H₂O (3:1)



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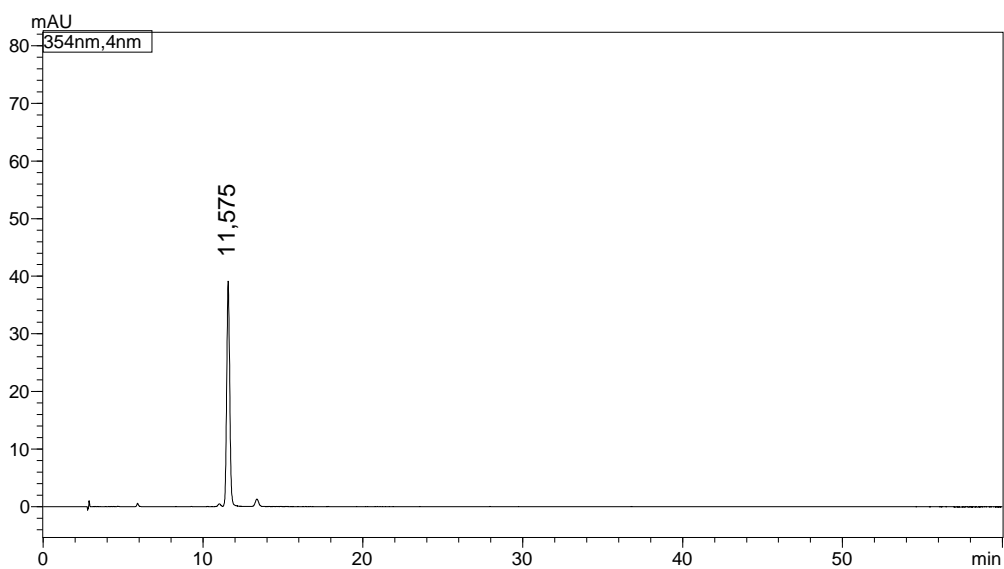
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555 **Figure S14. iv)** HPLC chromatogram of cinnamylideneacetophenone **15**

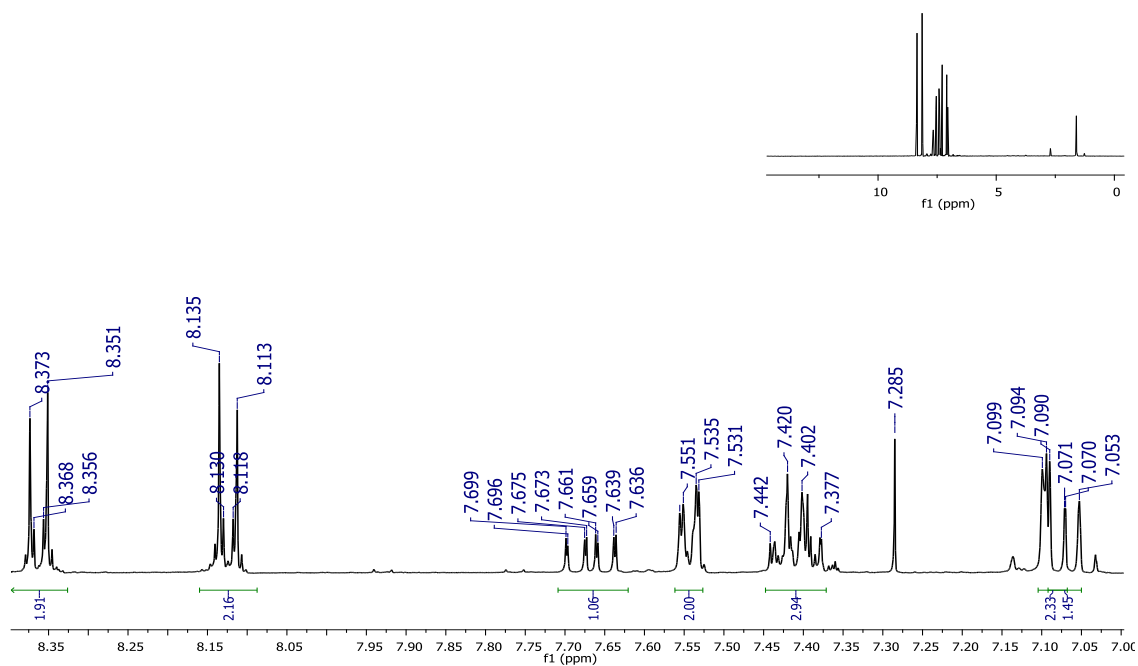


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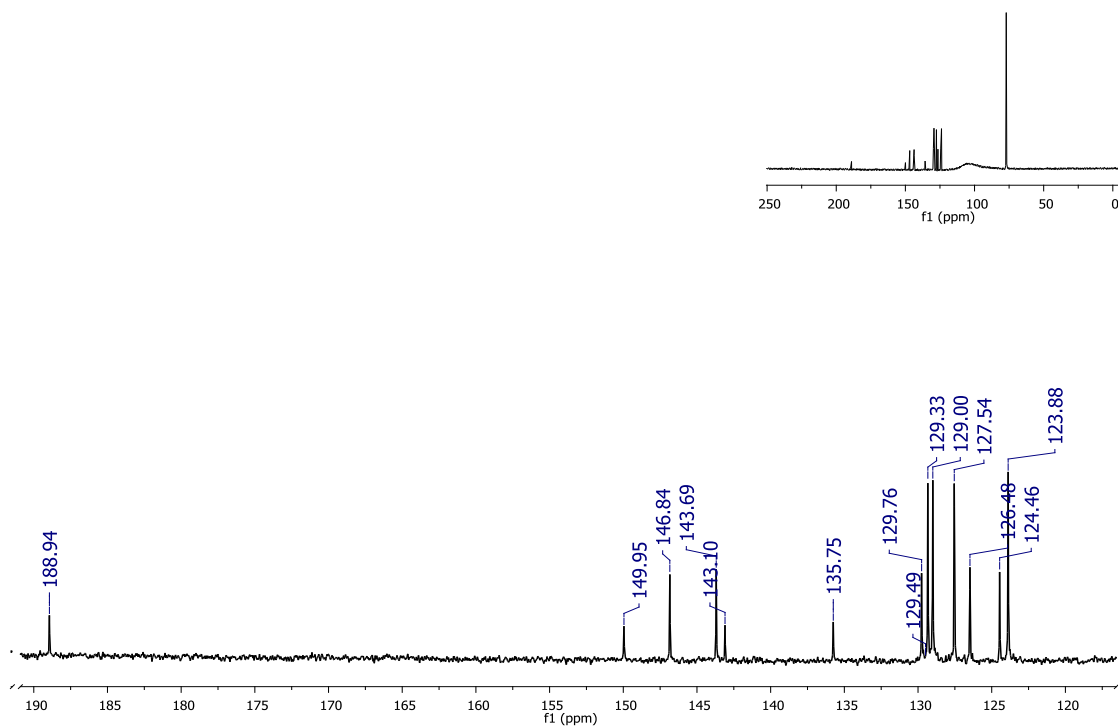
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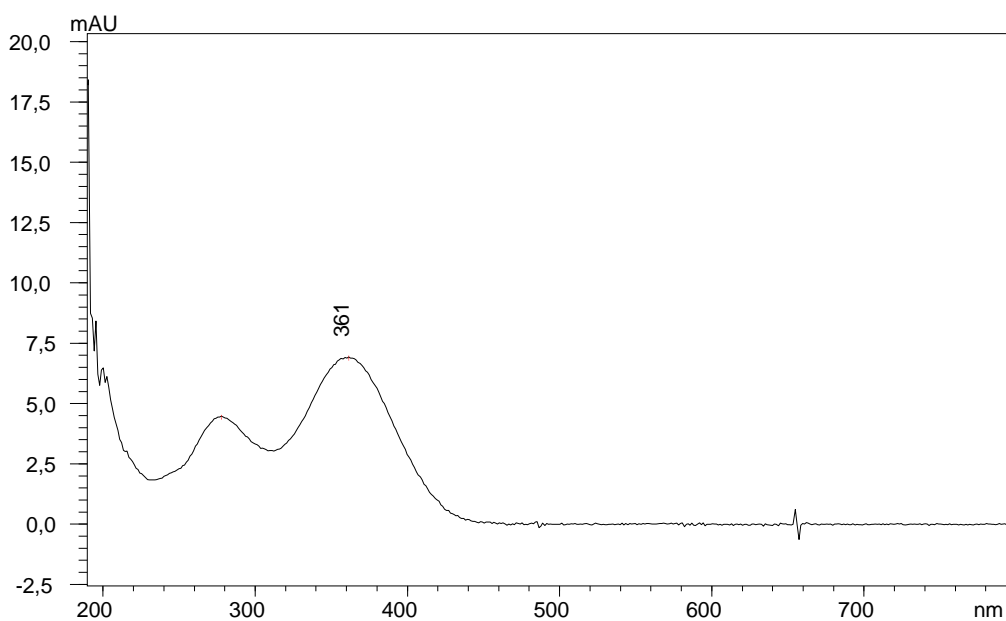
559 **Figure S15. i)** ^1H NMR spectrum of cinnamylideneacetophenone **16**



563 **Figure S15. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **16**



568 **Figure S15. iii)** UV-Vis spectrum of cinnamylideneacetophenone **16**, MeOH/H₂O (3:1)



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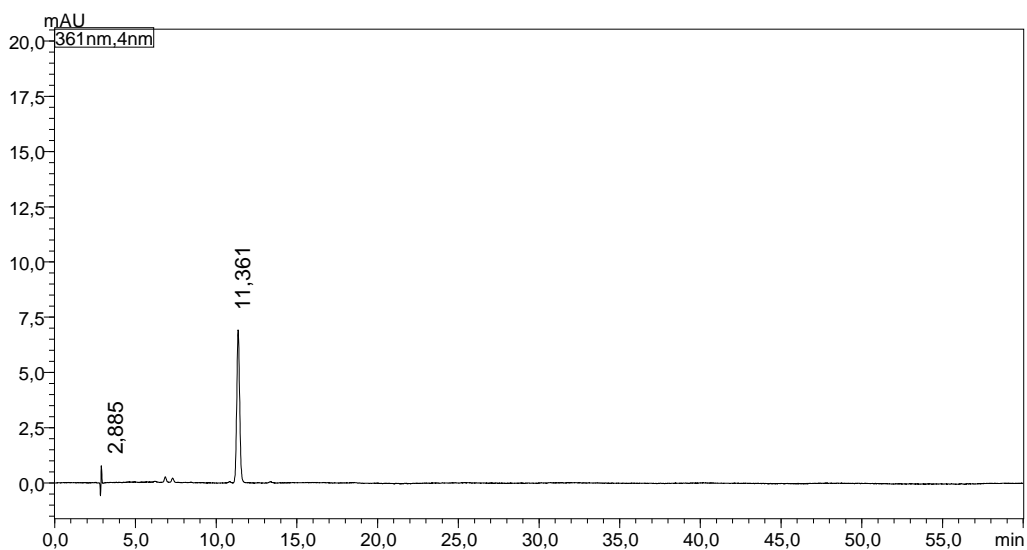
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574 **Figure S15. iv)** HPLC chromatogram of cinnamylideneacetophenone **16**



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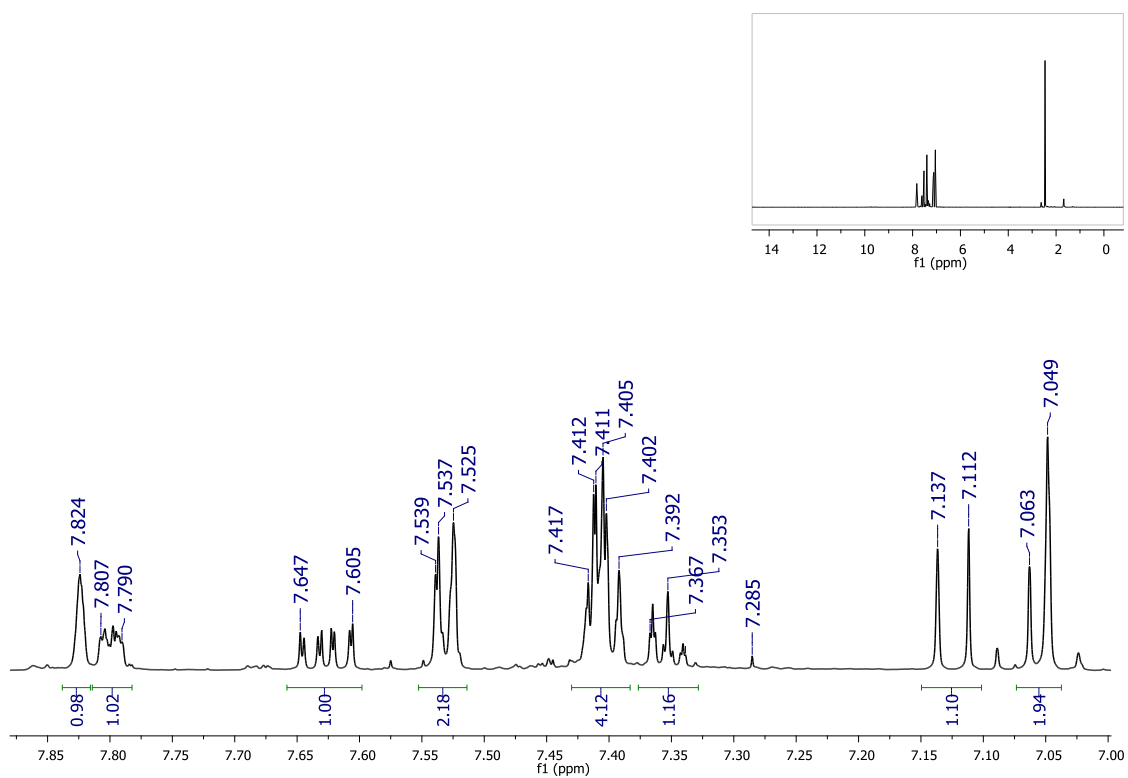
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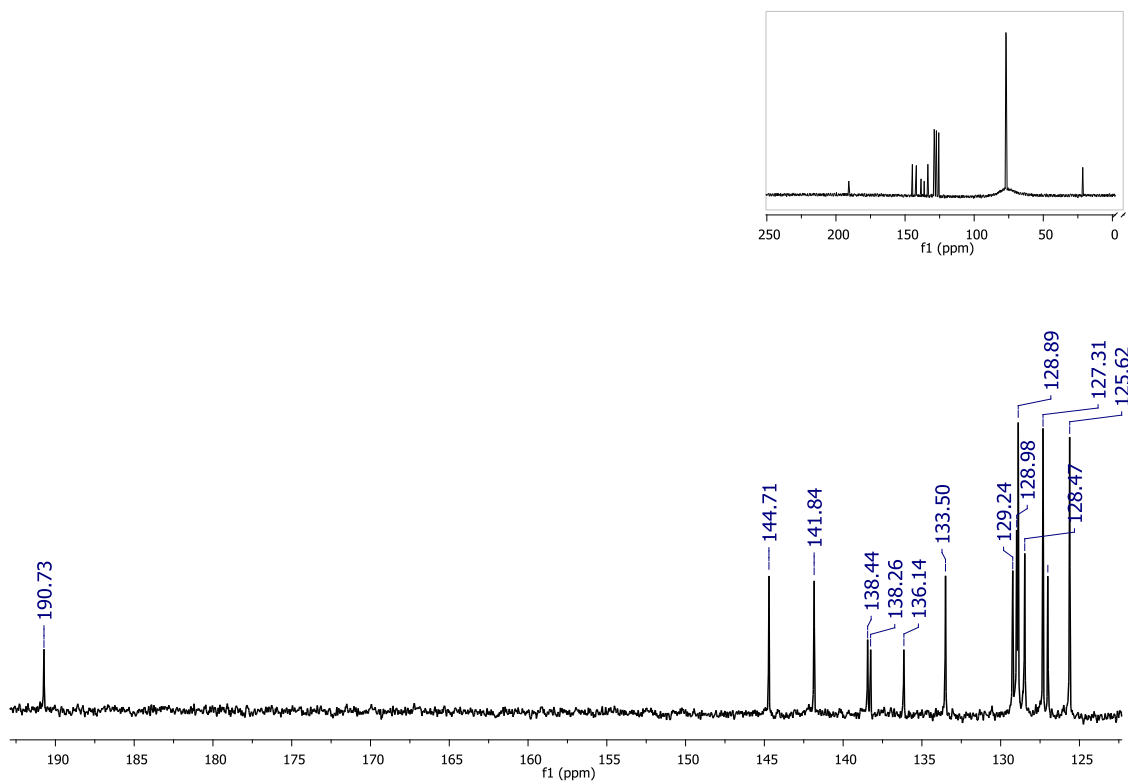
580 **Figure S16. i)** ^1H NMR spectrum of cinnamylideneacetophenone **17**



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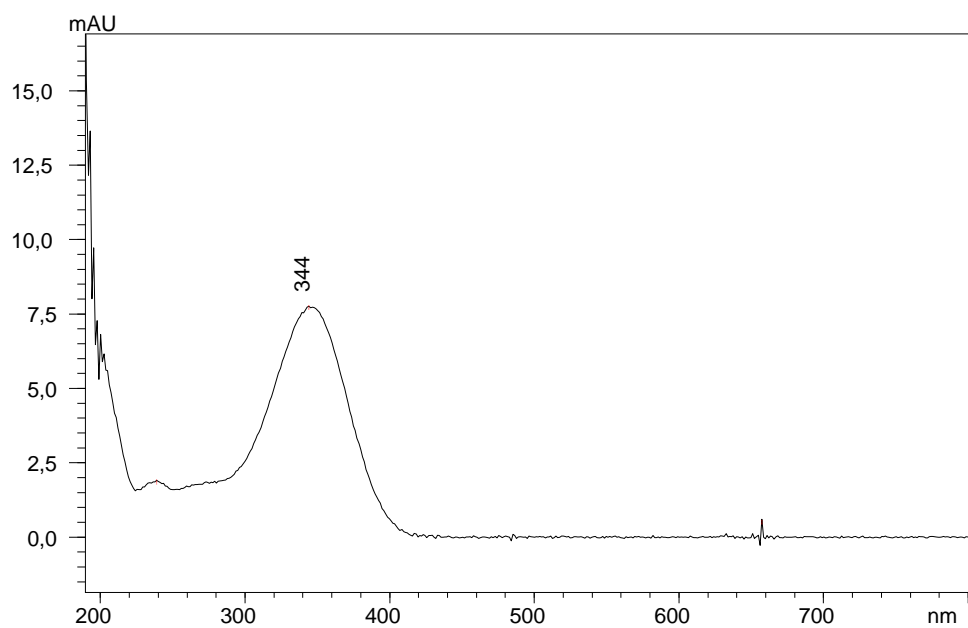
583 **Figure S16. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **17**



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586 **Figure S16. iii)** UV-Vis spectrum of cinnamylideneacetophenone **17**, MeOH/H₂O (3:1)



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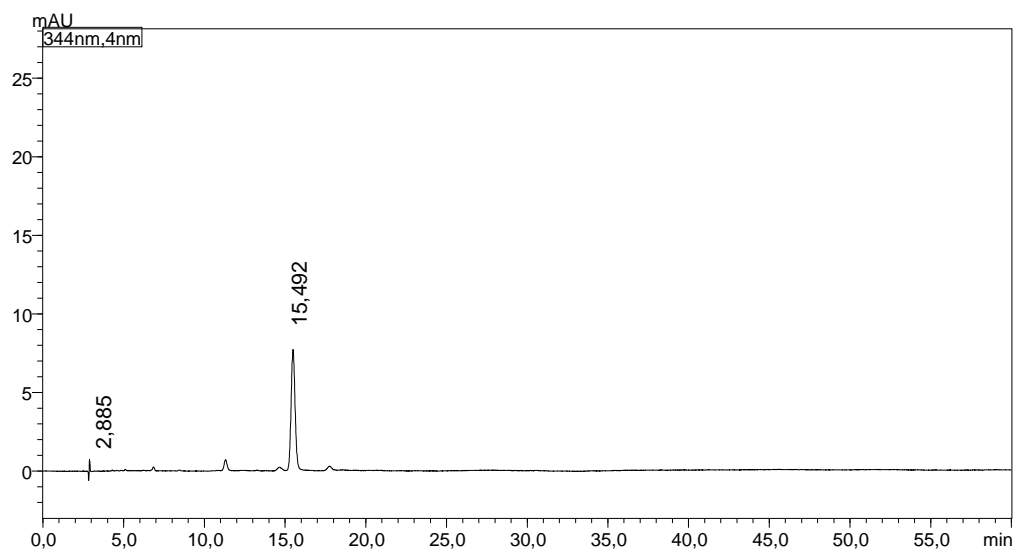
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592 **Figure S16. iv)** HPLC chromatogram of cinnamylideneacetophenone **17**



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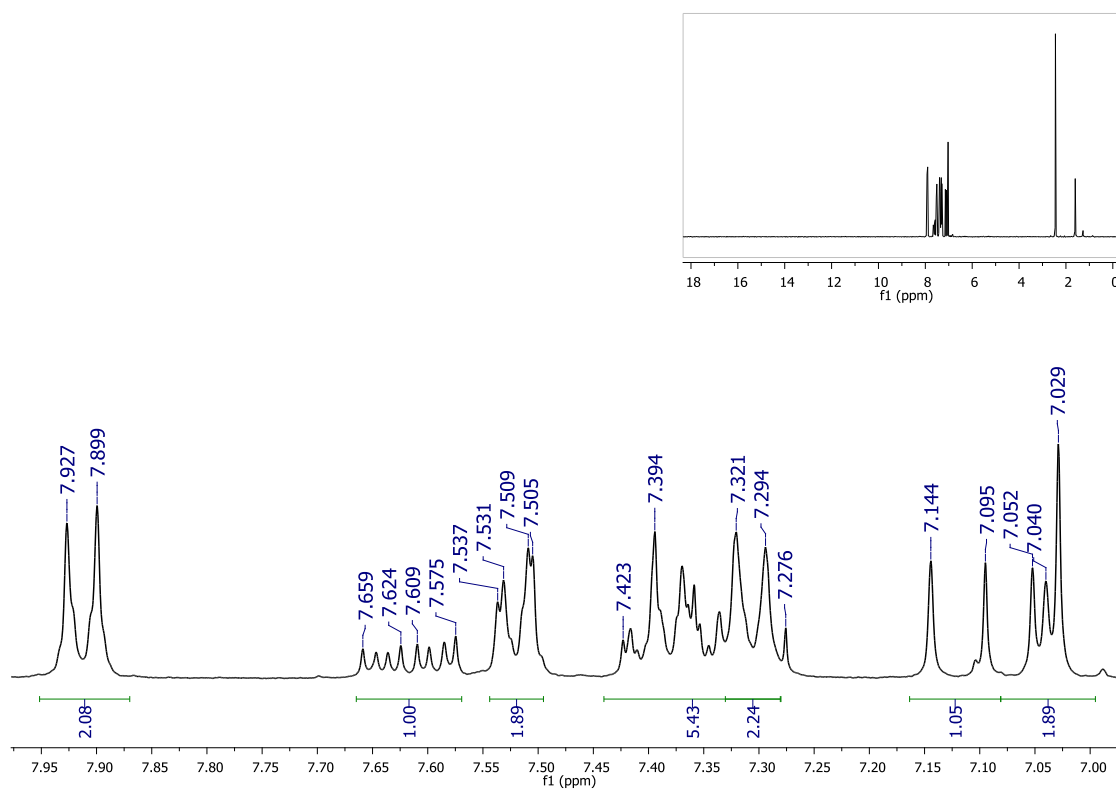
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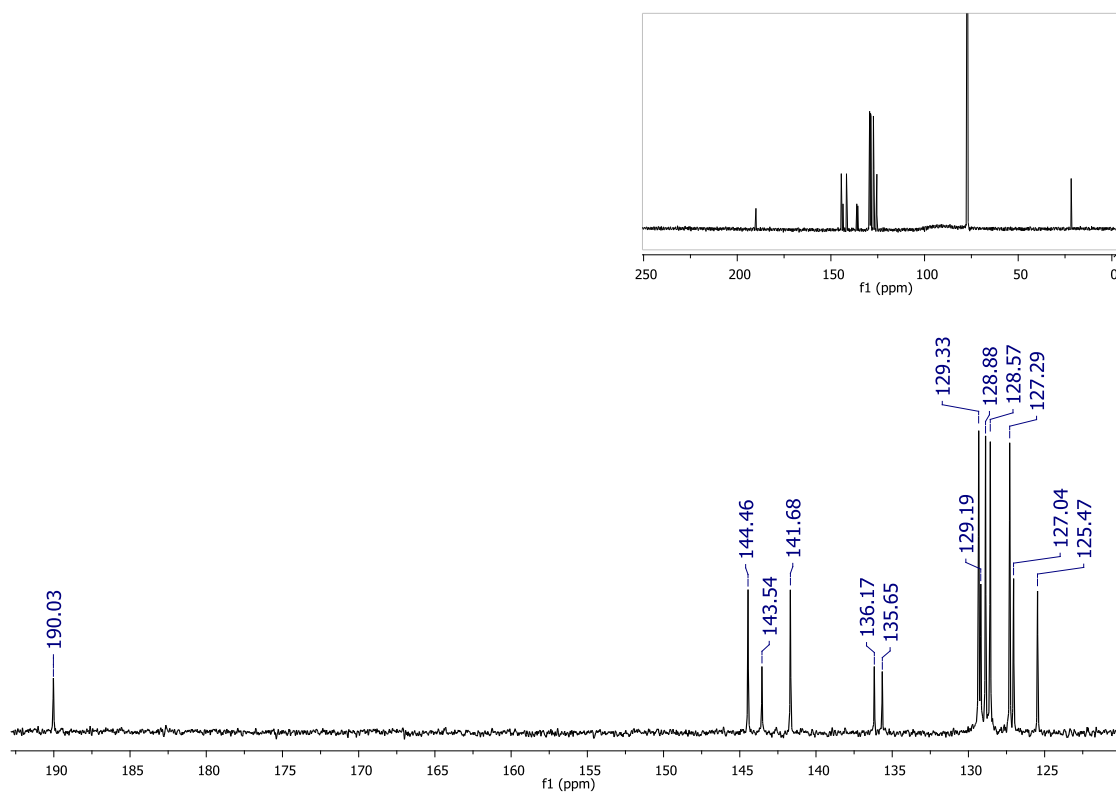
598 **Figure S17. i)** ^1H NMR spectrum of cinnamylideneacetophenone **18**



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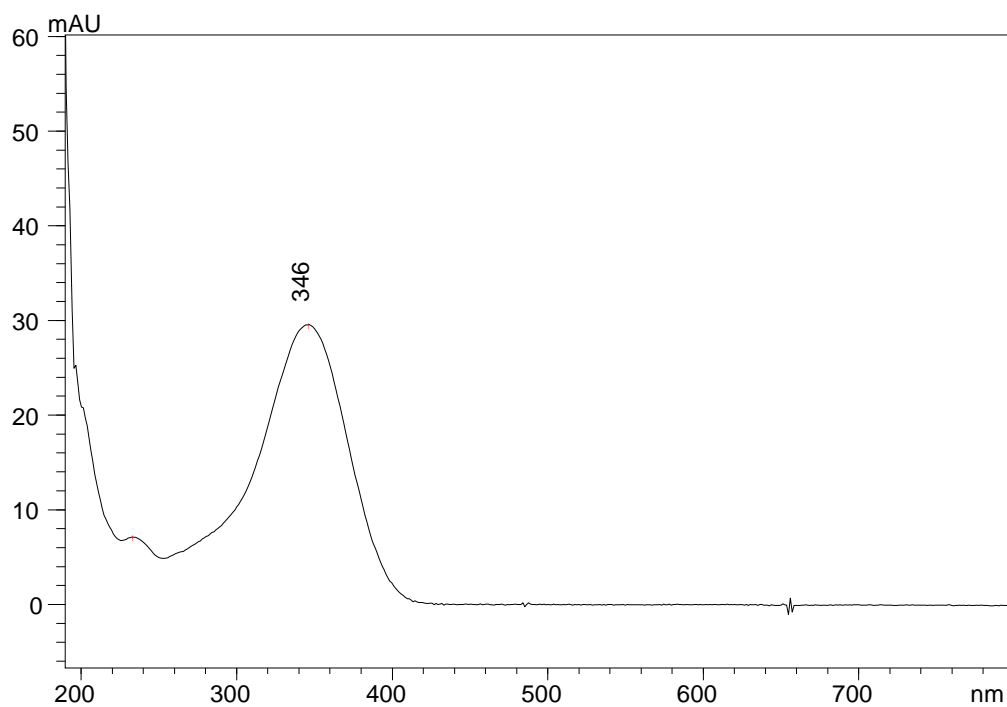
601 **Figure S17. ii)** ^{13}C NMR spectrum of cinnamylideneacetophenone **18**



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604 **Figure S17. iii)** UV-Vis spectrum of cinnamylideneacetophenone **18**, MeOH/H₂O (3:1)



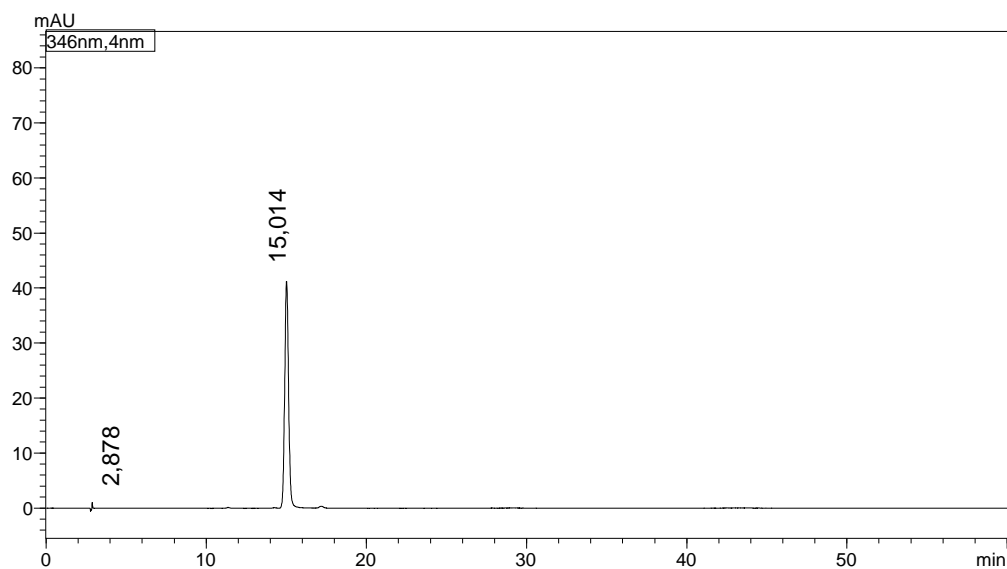
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609 **Figure S17. iv)** HPLC chromatogram of cinnamylideneacetophenone **18**



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