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# Supplementary Information

## Use of *Saccharomyces cerevisiae* Yeasts in the Chemoselective Bioreduction of (1*E*,4*E*)-1,5-Bis(4-Methoxyphenyl)-1,4-Pentadien-3-one in Biphasic System

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### Preparation of (1*E*,4*E*)-1,5-bis(4-methoxyphenyl)-1,4-pentadien-3-one (**1**)

The α,β-unsaturated carbonyl compound **1** was prepared by aldol condensation in a medium with 50% (m/v) of KOH using two equivalents of 4-methoxybenzaldehyde with one equivalent of acetone according to a commonly applied procedure described in the literature.[1] This compound was obtained as a yellow solid in 60% yield after 4 h of reaction. Retention time on GC $R_t$ of 12.5 min; m.p. 116-118 °C (115-117 °C)[2]; (KBr) IV $\nu_{max}$/cm$^{-1}$ 3434, 1653, 1630, 1600, 1511, 1256, 1175, 823; $^1$H NMR ($CDCl_3$, 400 MHz) $\delta$ (ppm) 7.7 (d, 2H, *J* 16 Hz), 7.5 (d, 4H, *J* 8 Hz), 6.9 (m, 6H), 3.8 (s,6H, –$OCH_3$).

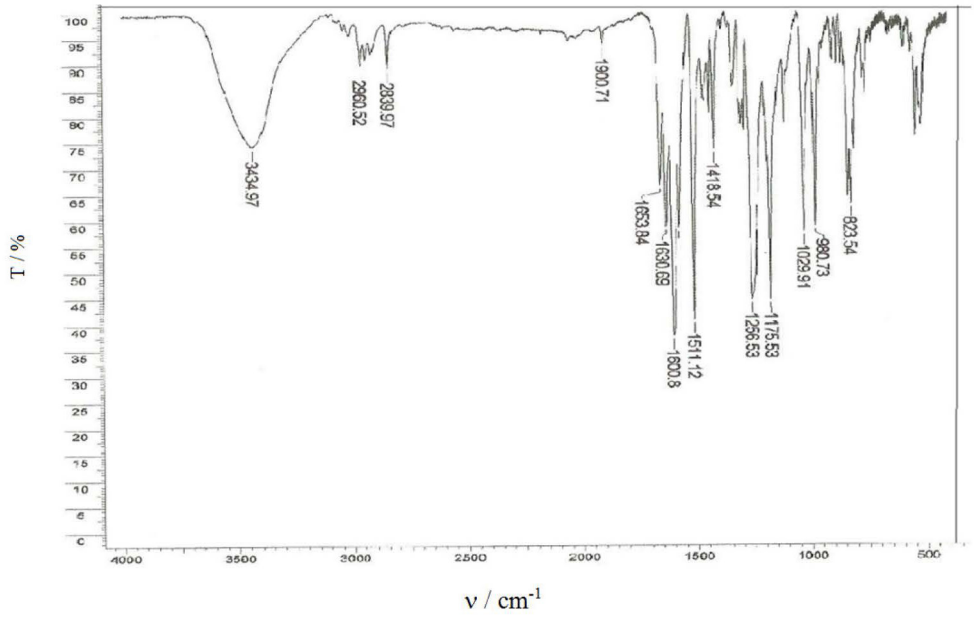


**Figure S1.** IR spectrum (KBr) of (1*E*,4*E*)-1,5-bis(4-methoxyphenyl)-1,4-pentadien-3-one.

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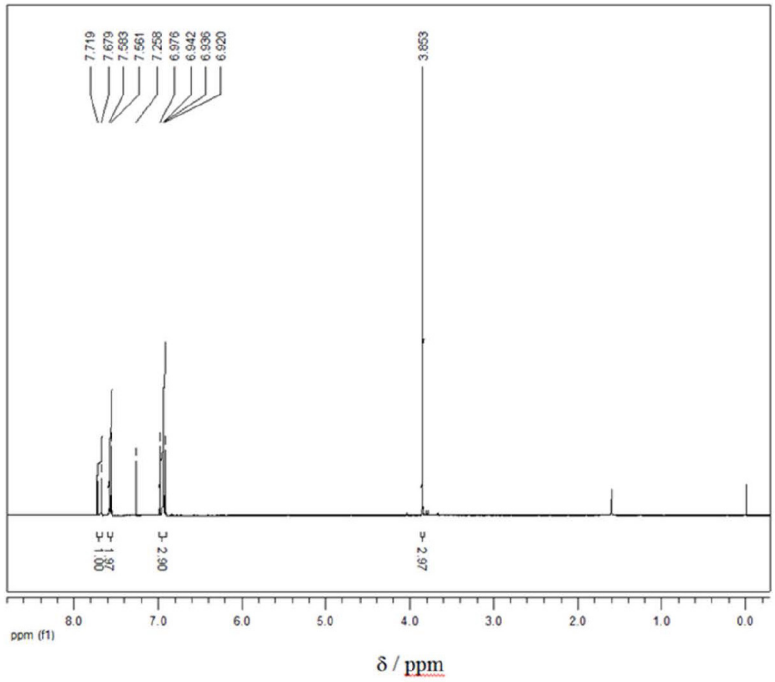


**Figure S2.** $^1$H NMR spectrum ($CDCl_3$, 400 MHz) of (1*E*,4*E*)-1,5-bis(4-methoxyphenyl)-1,4-pentadien-3-one.

Preparation of 1,5-bis(4-methoxyphenyl)-3-pentanone (**2**)

The saturated ketone **2** was prepared by baker's yeast-catalyzed bioreduction of **1** in an aqueous/organic solvent biphasic system. This compound was isolated and characterized by $^1$H NMR and GC. $^1$H NMR ($CDCl_3$, 400 MHz) $\delta$ (ppm) 7.1 (m, 4H), 6.8 (m, 4H), 3.8 (s, 6H, $-OCH_3$), 2.8 (t, 4H, $CH_2$) 2.6 (t, 4H, $CH_2$). Retention time on GC $R_t$ of 4.1 min.

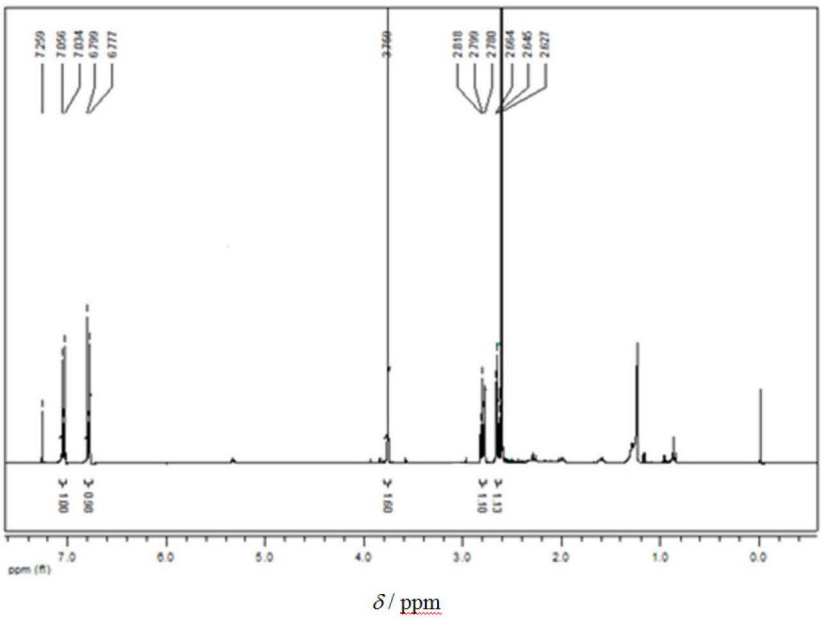


**Figure S3.** $^1$H NMR spectrum ($CDCl_3$, 400 MHz) of 1,5-bis(4-methoxyphenyl)-3-pentanone.

### Preparation of (1*E*,4*E*)-1,5-bis(4-metoxyphenyl)-1,4-pentadien-3-ol (**3**)

Compound **3** was prepared from (1*E*,4*E*)-1,5-bis(4-methoxyphenyl)-1,4-pentadien-3-one by the reduction with $NaBH_4$/wet $SiO_2$ as described in the literature with some modifications, and was used as a standard in the $^1$H NMR and GC analysis.[3] The alcohol **3** was obtained as a pale yellow solid in 49% yield after 1 h of reaction. Retention time on GC $R_t$ of 5.1 min; m.p. 77-80 °C (85-87 °C)[4]; IV $\nu_{max}$/cm$^{-1}$(KBr): 3538, 2957, 1605, 1513, 1250, 1174, 1030, 971, 817; $^1$H NMR ($CDCl_3$, 400 MHz) $\delta$ (ppm) 7.3 (d, 4H, *J* 8 Hz), 6.8 (d, 4H, *J* 8 Hz), 6.5 (d, 2H, *J* 16Hz), 6.1 (dd, 2H), 4.9 (m, 1H), 3.7 (s, 6H, –$OCH_3$).

## References


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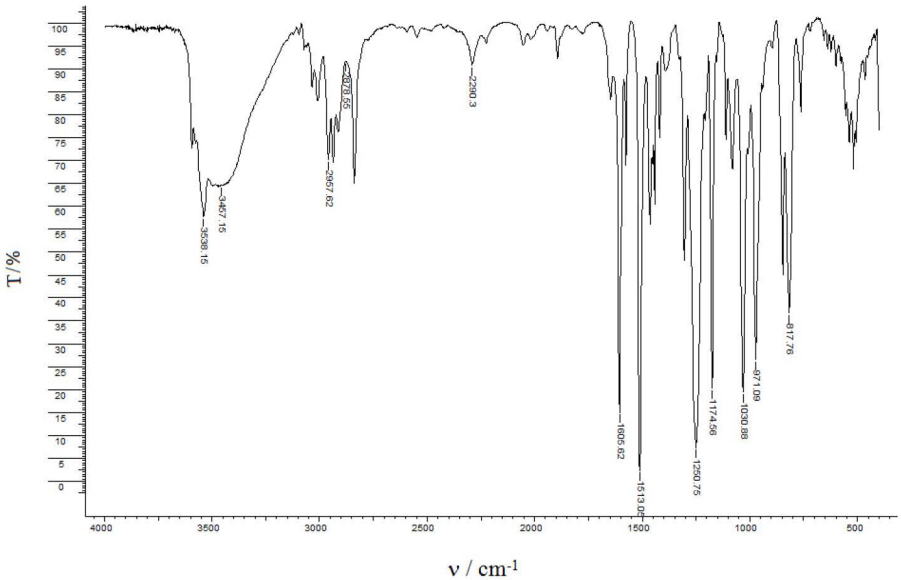


**Figure S4.** IR spectrum (KBr) of (1*E*,4*E*)-1,5-bis(4-metoxyphenyl)-1,4-pentadien-3-ol.

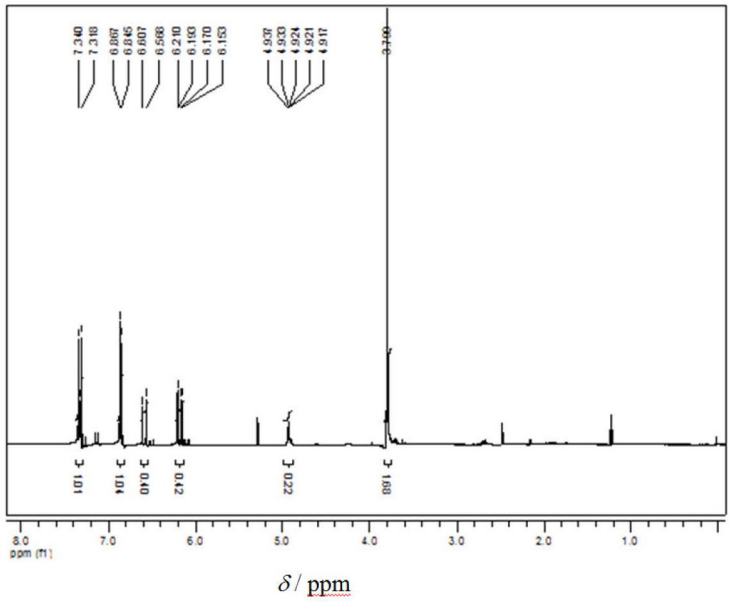


**Figure S5.** $^1$H NMR spectrum ($CDCl_3$, 400 MHz) of (1*E*,4*E*)-1,5-bis(4-metoxyphenyl)-1,4-pentadien-3-ol.