Supporting information for

O-Allylation of phenols with allylic acetates in aqueous medium using a magnetically separable catalytic system

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General Consideration

General Procedure for synthesis of compounds

1H and 13C NMR spectra
General Consideration

All the reactions were carried out in refluxing water under open aerial atmosphere. All the reagents were purchased from Sigma-Aldrich Chemical Co. and were used directly without further any purification. NMR spectra were obtained using the Bruker AVANCE 300MHz spectrometer using CDCl\textsubscript{3} as solvent. Chemical shifts (\(\delta\)) are given in ppm relative to TMS, coupling constants (J) in Hz. IR spectra were taken on Perkin Elmer Spectrum 2000 FT-IR spectrometer. Reactions were monitored by thin layer chromatography. Elemental analyses of the products were performed on a Costech Analytical - ECS 4010 Elemental analyzer. Elemental analyses of the catalyst before as well as after the reactions were performed on a Perkin Elmer Optima 3300 DV ICP-AES. Five mg of each sample was dissolved in 2.5 mL of concentrated aqua regia and the volume was adjusted to 50 mL in a volumetric flask. This solution was then used for the elemental analysis. TEM micrographs were recorded on TEM; Philips, CM20 microscope at an operating voltage of 200 kV. The particles were dispersed in ethanol by ultrasonication, loaded on a carbon coated copper grid, and then allowed to dry at room temperature before recording the micrographs.

Synthesis of magnetic nano-ferrites

FeSO\textsubscript{4}.7H\textsubscript{2}O (13.9 g) and Fe\textsubscript{2}(SO\textsubscript{4})\textsubscript{3} (20 g) were dissolved in 500 mL water in a 1000 mL beaker. Ammonium hydroxide (25\%) was added slowly to adjust the pH of the solution to 10. The reaction mixture was then continually stirred for 1 h at 60 °C. The precipitated nanoparticles were separated magnetically, washed with water until the pH reached 7, and then dried under a vacuum at 60 °C for 2 h. This magnetic nano-ferrite (Fe\textsubscript{3}O\textsubscript{4}) was then used for further chemical modification.

Surface functionalization of nano-ferrites

Nano-Fe\textsubscript{3}O\textsubscript{4} (2 g) was dispersed in 25 mL water by sonication for 30 min. Dopamine hydrochloride (2 g) dissolved in 5 mL of water was added to this solution and again sonicated for 2 h. The amine-functionalized nanomaterial was then precipitated using acetone, isolated by centrifugation, and dried under vacuum at 60 °C for 2 h.

Synthesis of [Fe\textsubscript{3}O\textsubscript{4}-Dopamine-Pd] catalyst

Dopamine functionalized nano-ferrite (1 g) was dispersed in MeOH (25 mL) by stirring. PdCl\textsubscript{2} (200 mg) was added slowly to the suspension and the solution was stirred for 10 min. Ammonium hydroxide (25\%) was added drop wise to bring the pH of the medium 9. The mixture was stirred at room temperature for 24 h. The nano catalyst was separated out using an external magnet. It was washed with acetone for three times and was dried under vacuum at 60 °C for 2 h.

O-Allylation of phenols by allylic acetates using [Fe\textsubscript{3}O\textsubscript{4}-Dopamine-Pd] catalyst

A mixture of phenol (1 mmol), allylic acetate (1 mmol), NaHCO\textsubscript{3} (2 mmol) and Pd-catalyst (50 mg, 4.8 mol\%) was taken in 2.5 mL of water. The aqueous reaction mixture was heated to reflux for required time period as indicated in Table 2. The progress of the reaction was monitored by TLC. Standard work-up with ethyl acetate followed by simple column chromatography provided the pure product. All products listed in Table 3 were known in the literature (except entry 6 and 11) and were identified by comparison.
of their FT-IR, $^1$H and $^{13}$C NMR with literature data. The products of entries 6 and 11, Table 3, were characterized by FT-IR, $^1$H and $^{13}$C NMR spectroscopy and elemental analysis.
Table 3, entry 1
$^{13}$C NMR, CDCl$_3$

Table 3, entry 2
$^1$H NMR, CDCl$_3$
Table 3, entry 2

$^{13}$C NMR, CDCl$_3$
Table 3, entry 3

\[ \text{\^1H NMR, CDCl}_3 \]

Table 3, entry 3

\[ \text{\textsuperscript{13}C NMR, CDCl}_3 \]

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**Table 3, entry 3**

<table>
<thead>
<tr>
<th>1H NMR, CDCl₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75 (s), 3.76 (s), 7.25 (s)</td>
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</table>

**13C NMR, CDCl₃**

| 160.40, 133.80, 128.70, 127.90, 126.90, 124.10, 20.60 |

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**Graphical Data**

*Chemical structure images showing *O*-arylethylene and related spectra.*
Table 3, entry 4
$^1$H NMR, CDCl$_3$

Table 3, entry 4
$^{13}$C NMR, CDCl$_3$
Table 3, entry 5

$^1$H NMR, CDCl$_3$

Table 3, entry 5

$^{13}$C NMR, CDCl$_3$
Table 3, entry 6
$^1$H NMR, CDCl$_3$

Table 3, entry 6
$^{13}$C NMR, CDCl$_3$
Table 3, entry 9

**1H NMR, CDCl₃**

![1H NMR spectrum]

Table 3, entry 9

**13C NMR, CDCl₃**

![13C NMR spectrum]
Table 3, entry 10
$^{13}$C NMR, CDCl$_3$

Table 3, entry 10
$^1$H NMR, CDCl$_3$
Table 3, entry 11

$^1$H NMR, CDCl$_3$

Table 3, entry 11

$^{13}$C NMR, CDCl$_3$
Table 3, entry 12
\[ ^1H \text{NMR, CDCl}_3 \]

Table 3, entry 12
\[ ^13C \text{NMR, CDCl}_3 \]