Figure S.1. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O/EtOH at 25 °C, under microwave irradiation for 10 min (Table 1, entry 1).
Figure S.2. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O/EtOH at 50 °C, under microwave irradiation for 10 min (Table 1, entry 2).

Figure S.3. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O/EtOH at 120 °C, under microwave irradiation for 10 min (Table 1, entry 3).

Figure S.4. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O/EtOH at 120 °C, under microwave irradiation for 10 min, catalyst 0.016 mol% (Table 1, entry 4).
Figure S.5. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 70 °C, under microwave irradiation for 10 min, (Table 2, entry 1).

Figure S.6. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 70 °C, under microwave irradiation for 15 min, (Table 2, entry 2).
Figure S.7. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 70 °C, under microwave irradiation for 30 min, (Table 2, entry 3).

Figure S.8. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, (Table 2, entry 4).
Figure S.9. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 15 min, (Table 2, entry 5).

Figure S.10. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 2 min, additive TBAB (0.05 mmol) (Table 2, entry 6).
Figure S.11. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol) (Table 2, entry 7).

Figure S.12. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol) (Table 2, entry 8).
Figure S.13. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 2, entry 9; Table 3, entry 1).

Figure S.14. $^1$H-NMR spectrum of crude reaction mixture of 4-methoxy-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 2).
Figure S.15. $^1$H-NMR spectrum of crude reaction mixture of 4-carbaldheyde-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 3).

Figure S.16. $^1$H-NMR spectrum of crude reaction mixture of 4-methoxy-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 4).
Figure S.17. $^1$H-NMR spectrum of crude reaction mixture of 3-carbaldheyde-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 5).

Figure S.18. $^1$H-NMR spectrum of crude reaction mixture of 3-methoxy-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 6).
Figure S.19. $^1$H-NMR spectrum of crude reaction mixture of 4-acetyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 7).

Figure S.20. $^1$H-NMR spectrum of crude reaction mixture of 2-methyl-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 8).
Figure S.20. $^1$H-NMR spectrum of 4-chloro-benzaldehyde. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 9).

Figure S.21. $^1$H-NMR spectrum of crude reaction mixture of 4-nitro-1,1'-biphenyl. Reaction carried out in H$_2$O at 120 °C, under microwave irradiation for 10 min, additive TBAB (0.05 mmol), catalyst 0.016 mol% (Table 3, entry 10).