The 23rd International Electronic Conference on Synthetic Organic Chemistry

Green, microwave-assisted synthesis of *O*-perbutyrylated-alkyl-glycosides

Section: Microwave Assisted Synthesis

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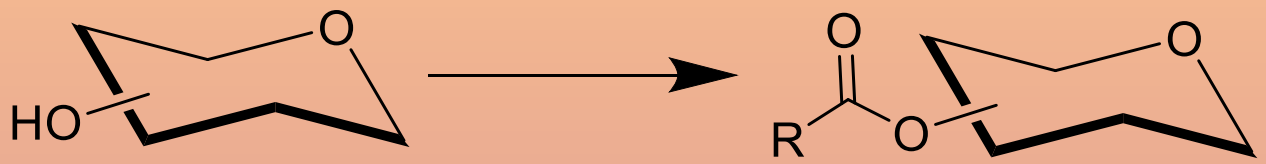
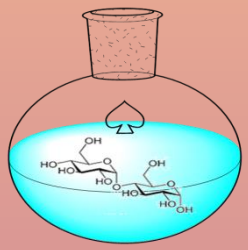
Introduction

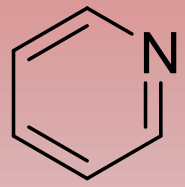


R=Me, Et, Pr

- Acylation as protective step in carbohydrate synthesis

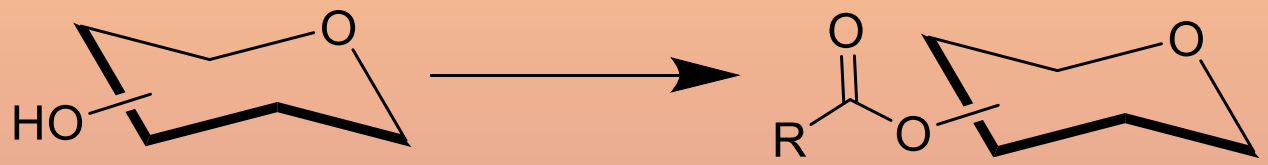


- Conventional heating and Lewis acids as common promoters



Time consuming and toxic catalysts

Introduction

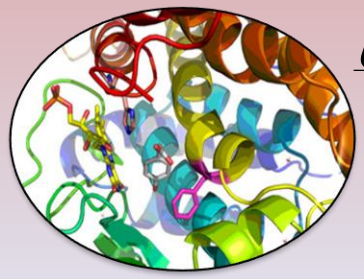


R=Me, Et, Pr

- Microwaves and imidazol = Swift and green option

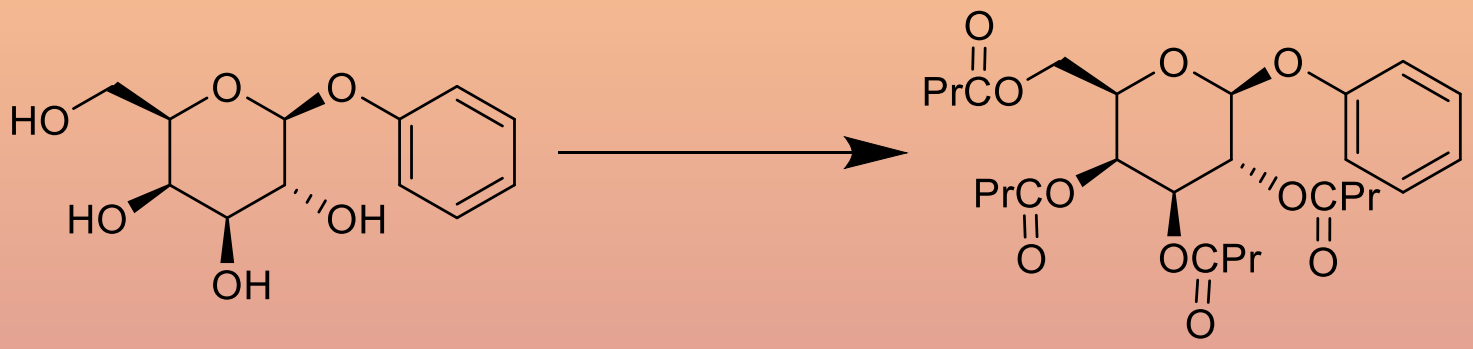
- *O*-perbutyryl-alkyl-glycosides

Biopharmaceutical properties



Carbohydrate enzymatic production

Methods



Imidazole + Room Temperature

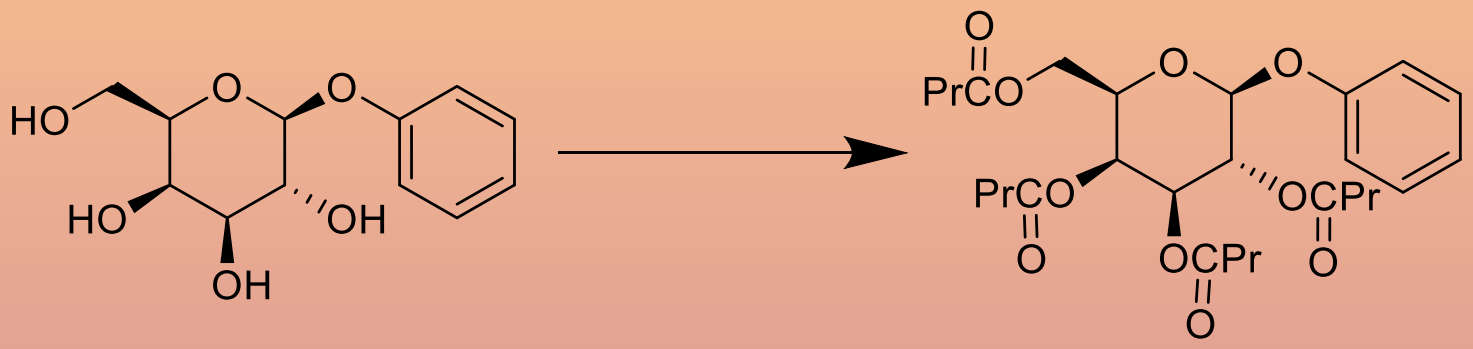
and

Imidazole + M.W.

Characterization:

- ✓ **TLC**
- ✓ **^{1}H-NMR**
- ✓ **^{13}C-NMR**

Results

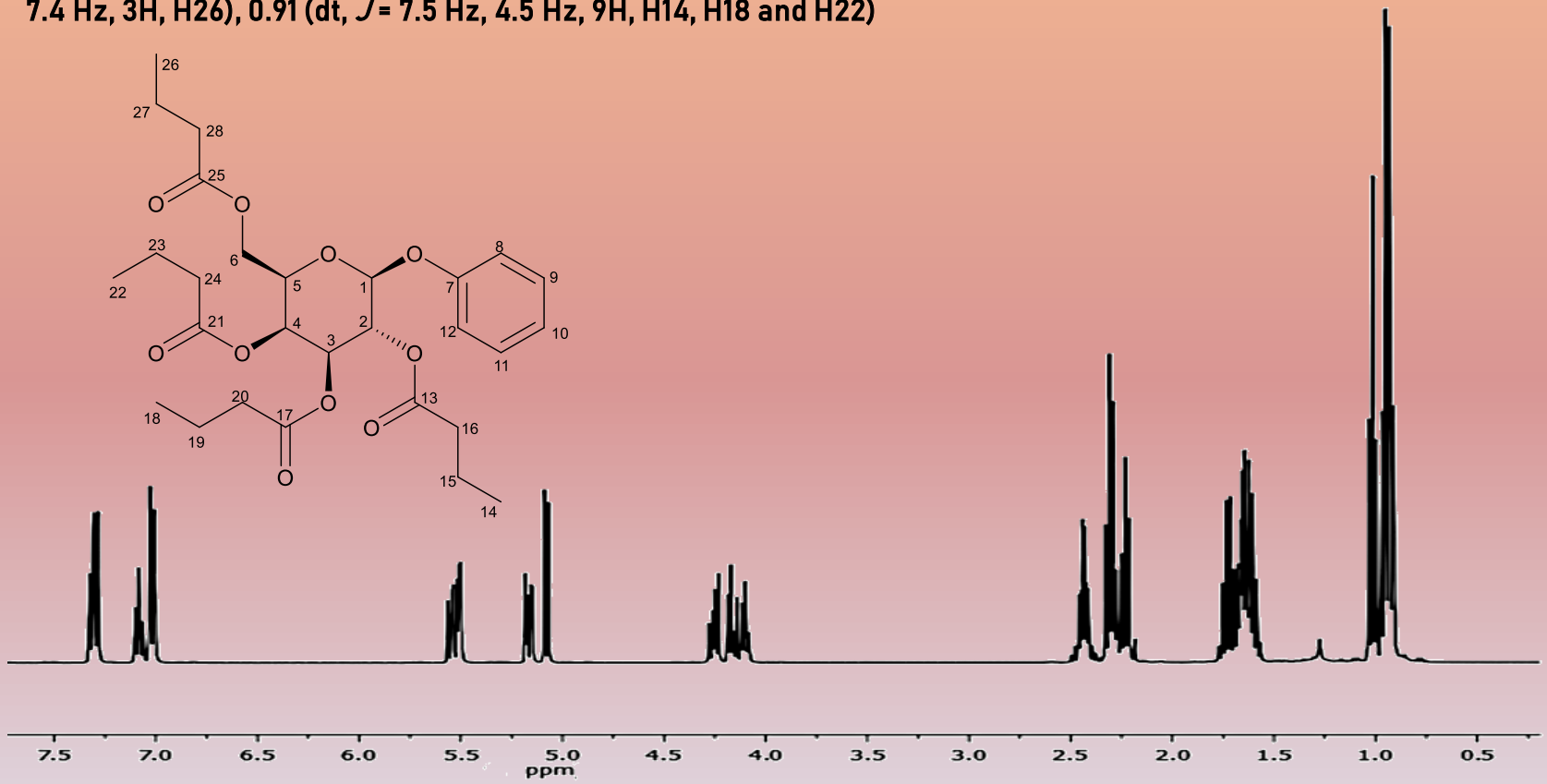


Imidazole + R.T. → **60 h for total consume of starter material**

Imidazole + M.W. → **Only 1 h for total consume of starter material**

Results

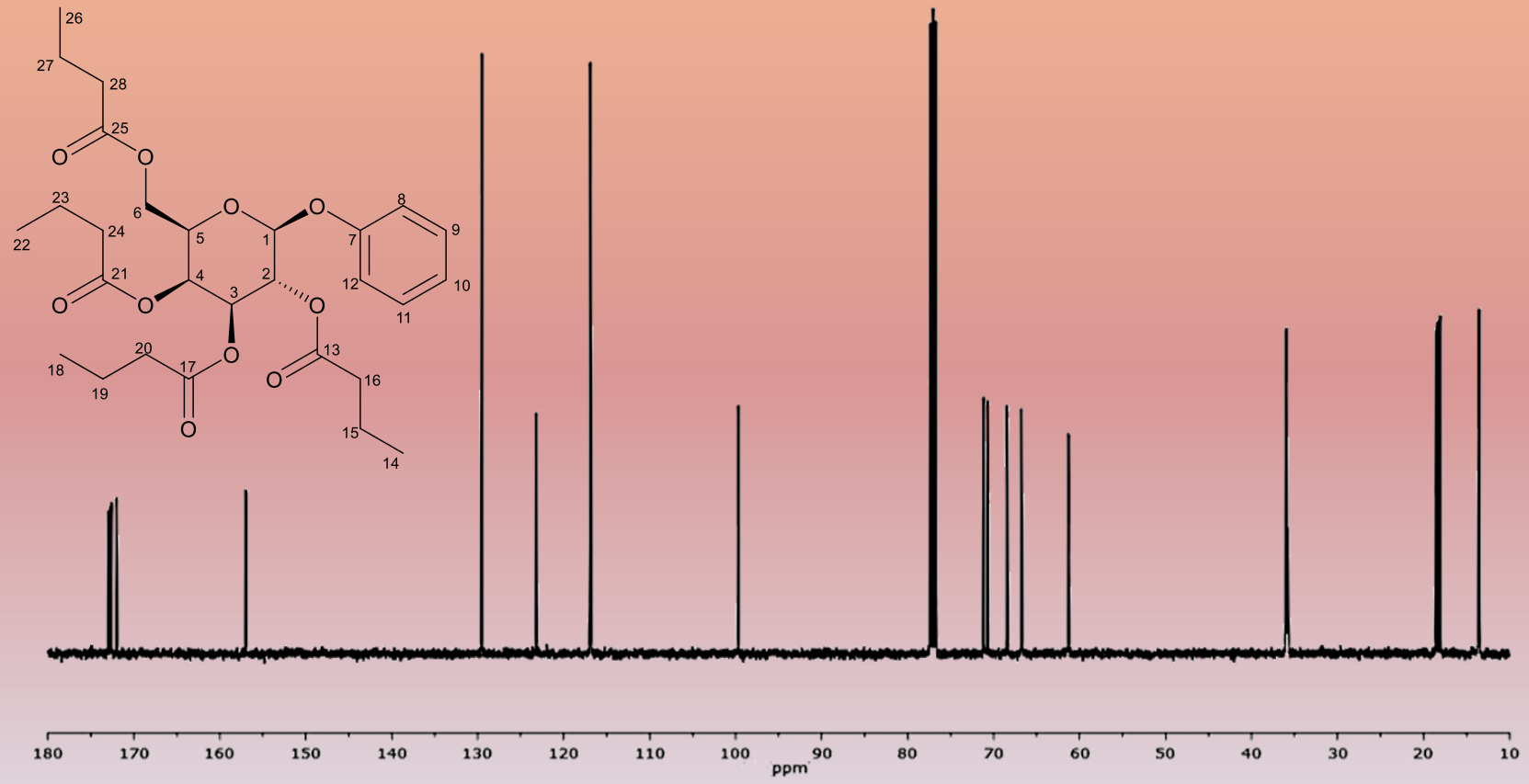
δ 7.28 (m, 2H, H9 and H11), 7.06 (t, *J* = 7.4 Hz, 1H, H10), 6.99 (dd, *J* = 8.6 Hz, 0.9 Hz, 2H, H8 and H12), 5.55 – 5.46 (m, 2H, H6), 5.14 (dd, *J* = 10.5 Hz, 3.4 Hz, 1H, H3), 5.05 (d, *J* = 8.0 Hz, 1H, H1), 4.23 (dd, *J* = 11.1 Hz, 7.0 Hz, 1H, H4), 4.14 (dd, *J* = 11.2 Hz, 6.1 Hz, 1H, H2), 4.10 – 4.05 (m, 1H, H5), 2.46 – 2.36 (m, 2H, H16), 2.27 (dt, *J* = 7.3 Hz, 4.4 Hz, 4H, H20 and H28), 2.21 (t, *J* = 7.3 Hz, 2H, H24), 1.69 (dt, *J* = 9.6 Hz, 4.8 Hz, 2, H27), 1.66 – 1.55 (m, 6H, H15, H19 and H23), 0.99 (t, *J* = 7.4 Hz, 3H, H26), 0.91 (dt, *J* = 7.5 Hz, 4.5 Hz, 9H, H14, H18 and H22)



^{1}H-NMR (400 MHz, $CDCl_3$) of *O*-perbutyrylated-phenyl-galactose

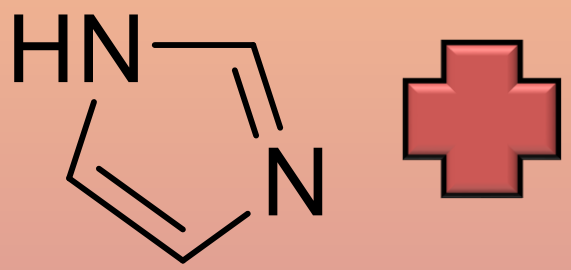
Results

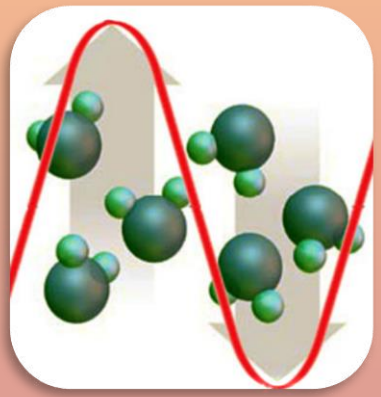
δ 173.01-172.11 (C13, C17, C21 and C25), 157.13 (C7), 129.65 (C9 and C12), 123.33 (C10), 117.00 (C8 and C12), 99.81 (C1), 71.31 (C3), 70.85 (C5), 68.56 (C2), 66.88 (C4), 61.44 (C6), 36.03 (C16, C20, C24 and C28), 18.78 – 18.17 (C15, C19, C23 and C27), 13.69 (C14, C18, C22 and C26)



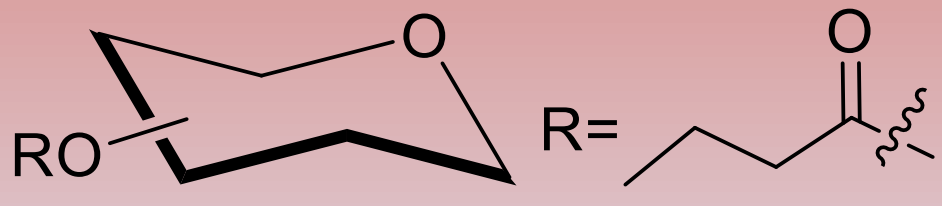
^{13}C-NMR (101 MHz, $CDCl_3$) of *O*-perbutyrylated-phenyl-galactose

Conclusions





Excellent green strategy to



O-perbutyrylated-alkyl-glycosides synthesis