## **Supplementary Materials**

## Chemoenzymatic Synthesis of New Aromatic Esters of Mono- and Oligosaccharides

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Figure S1. Chemical structures of aromatic compounds tested as substrates for lipases.

Carbohydrate	Biocatalyst	Conversion(%)
α-D-glucose	Pseudomonas fluorescens	2
	Candida antarctica B	1
	Thermomyces lanuginsous	6
sucrose	Pseudomonas fluorescens	1
	Candida antarctica B	< 1
	Thermomyces lanuginsous	4
lactose	Pseudomonas fluorescens	1
	Candida antarctica B	< 1
	Thermomyces lanuginsous	3
inulin	Pseudomonas fluorescens	1
	Candida antarctica B	< 1
	Thermomyces lanuginsous	4

**Table S1.** Transesterification reaction conversions of  $\alpha$ -D-glucose, sucrose, lactose, inulin with methyl 3- (4-hydroxyphenyl) propionate (HPPME) catalyzed by native lipases after 72 hours of reaction.



**Figure S2.** MALDI-TOF MS spectrum of the reaction mixture from  $\alpha$ -methyl-glucose acylation with HPPA catalyzed by Novozyme 435, after 72 h, containing the 6-O-[3-(4-hydroxyphenyl)propionyl] *methyl*- $\alpha$ -D-glucoside product.



**Figure S3.** MALDI-TOF MS spectrum of the reaction mixture from  $\alpha$ -methyl-glucose acylation with HPPA catalyzed by Novozyme 435, after 72 h, containing *6-O-[3-(4-hydroxyphenyl) propionyl] octyl-\beta-D-glucoside (2), after 72 h.* 



**Figure S4.** FT-IR spectra of  $\alpha$ -methyl-glucose (a); HPPA (b) and 6-O-[3-(4-hydroxyphenyl) propionyl] *methyl*- $\alpha$ -D-glucoside (c). Insert is zoom in of the spectrum at wavenumber 2000–600 cm<sup>-1</sup>.



**Figure S5.** FT-IR spectra of  $\beta$ -octyl-glucose (a); HPPA (b) and 6-O-[3-(4-hydroxyphenyl)propionyl] octyl- $\beta$ -D-glucoside (c). Insert is zoom in of the spectrum at wavenumber 2000–600 cm<sup>-1</sup>.



**Figure S6.** <sup>1</sup>H-NMR spectrum of 6-O-[3-(4-hydroxyphenyl) propionyl] methyl- $\alpha$ -D-glucoside (collected in DMSO-d<sub>6</sub>).



**Figure S7.** <sup>13</sup>C-NMR spectrum of 6-O-[3-(4-hydroxyphenyl) propionyl] methyl-α-D-glucoside (collected in DMSO-d<sub>6</sub>).



**Figure S8.** 135DEPT-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl] methyl- $\alpha$ -D-glucoside (collected in DMSO-d<sub>6</sub>).



**Figure S9.** <sup>1</sup>H-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl] octyl-β-D-glucoside (2).



Figure S10. <sup>13</sup>C-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl] octyl-β-D-glucoside (2).



**Figure S11.** 135DEPT-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl] octyl-β-D-glucoside (2).



Figure S12. <sup>1</sup>H-NMR spectrum of 1,2-O-isopropylidene-glucofuranose.



Figure S13. <sup>13</sup>C-NMR spectrum of 1,2-O-isopropylidene-glucofuranose.



Figure S14. 135DEPT-NMR spectrum of 1,2-O-isopropylidene-glucofuranose.



**Figure S15.** FT-IR spectra of glucose (a) *1,2-O-isopropylideneglucose* (b) *1,2:5,6-di-O-isopropylideneglucose* (c) Insert is zoom in of the spectrum at wavenumber 2000–600 cm<sup>-1</sup>.



**Figure S16.** FT-IR spectra of D-glucose (a) isopropylidene-D-glucose (b) *6-O-[3-(4-hydroxyphenyl)propionyl]-1,2-O-isopropylidene-D-glucofuranose* (3). Insert is zoom in of the spectrum at wavenumber 2000–600 cm<sup>-1</sup>.



**Figure S17.** MALDI TOF MS spectrum of the reaction mixture after acylation of *1,2-O-isopropylidene sucrose* with HPPA, catalyzed by Novozyme 435 after 72 h.



**Figure S18.** <sup>13</sup>C-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl]-1,2-O-isopropylidene-D-glucofuranose.



**Figure S19.** <sup>1</sup>H-NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl]-1,2-O-isopropylidene-D-glucofuranose.



**Figure S20.** 135DEPT NMR spectrum of 6-O-[3-(4-hydroxyphenyl)propionyl]-1,2-O-isopropylidene-D-glucofuranose.



Figure S21. FT-IR spectra of (a) sucrose; (b) 2,1':4,6-di-O-isopropylidene sucrose (4).



Figure S22. <sup>13</sup>C-NMR spectrum of 2,1 ':4,6-di-O-isopropylidene sucrose (4).



Figure S24. 135 DEPT NMR spectrum of 2,1 ':4,6-di-O-isopropylidene sucrose (4).



2,3:5,6:4',6'-tri-O-isopropylidenelactose dimethyl acetal

2,3:5,6:3',4'-tri-O-isopropylidenelactose dimethyl acetal (5)

**Scheme S1.** Reaction scheme of 2,3: 5,6: 4 ', 6 '-tri-O-isopropylidene dimethyl lactose and 2,3: 5,6: 3 ', 4 '-tri-O-isopropylidene dimethyl lactose (5) synthesis by acetalization of lactose with 2,2- dimethoxypropane, in the presence of *p*-toluenesulfonic acid, at reflux, 24 h.



Figure S25. <sup>13</sup>C-NMR spectrum of 2,3:5,6:3 ',4 '-tri-O-isopropylidene dimethyl lactose (5).



Figure S26. <sup>1</sup>H-NMR spectrum of 2,3:5,6:3 ',4 '-tri-O-isopropylidene dimethyl lactose (5).



Figure S27. 135DEPT NMR spectrum of 2,3:5,6:3 ',4 '-tri-O-isopropylidene dimethyl lactose (5).



**Figure S28.** MALDI-TOF MS spectrum of the reaction mixture after esterification of 2,3:5,6:3', 4'-*tri-O-isopropylidene dimethyl lactose* with HPPA, in *tert*-butanol at 60 ° C in the presence of Novozyme 435.