Electronic Supplementary Information

Enzymatic synthesis of polysaccharide-based copolymers

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The copolymer production yields, including the synthesis and purification steps, were determined as follows:

(1) The mass (g) of glucosyl moieties incorporated (Glu_{inc}) from sucrose into the copolymer was determined as follows :

$$m_{GLUinc} = \frac{m_{Sucrose}}{342} \times 162$$

(2) The theoretical mass (g) of copolymer ($m_{COPOtheor}$) produced if all the glucosyl moieties from sucrose are incorporated into copolymer was calculated as follows:

$$m_{COPOtheor} = m_{GLUinc} + m_{acceptor}$$

(3) The copolymer production yield was determined as follows :

$$yield\ (\%) = \frac{m_{COPO}}{m_{COPOtheor}} \times 100$$

with m_{COPO} corresponding to the mass of copolymer obtained after synthesis, purification and drying.

Table SI: final copolymer production yields, including both the synthesis and purification steps.

Alternan-*b*-amylose	
Reaction volume (mL)	113
Enzyme	ASR
Units number	113
$m_{sucrose}$ (g)	11.3
$m_{acceptor}$ (g) → amylose	1.89
$m_{COPOtheor}$ (g)	7.24
m_{COPO} (g)	0.85
Yield (%)	**11.7**

Dextran-*b*-alternan-*b*-amylose	
Reaction volume (mL)	1
Enzyme	DSR-M
Units number	1
$m_{sucrose}$ (g)	0.1
$m_{acceptor}$ (g) → alternan-*b*-amylose	0.015
$m_{COPOtheor}$ (g)	0.062
m_{COPO} (g)	0.008
Yield (%)	**12.9**

Dextran-*b*-alternan	
Reaction volume (mL)	12
Enzyme	DSR-M
Units number	12
$m_{sucrose}$ (g)	1.2
$m_{acceptor}$ (g) → alternan	0.18
$m_{COPOtheor}$ (g)	0.75
m_{COPO} (g)	0.065
Yield (%)	**8.7**

The copolymer synthesis yields were estimated as follows, based on the HPAEC-PAD analysis of the reaction media at the initial and final reaction times:

(1) The estimated mass (g) of copolymer ($m_{COPOestimated}$) was determined as follows:

$$m_{COPO\ estimated} = \frac{Final\ Area\ copolymer}{Initial\ Area\ acceptor} \times [Acceptor] \times \ \ Reaction\ volume$$

The initial and final areas were obtained from the HPAEC-PAD chromatograms of the reaction media at the initial and final reaction times, respectively

(2) The copolymer synthesis yield was determined as follows :

$$synthesis\ yield\ \ (\%) = \frac{m_{COPOestimated}}{m_{COPOtheor}} \times 100$$

Table SII: copolymer synthesis yields.

Alternan-*b*-amylose	
Reaction volume (mL)	113
Enzyme	ASR
Units number	113
$m_{sucrose}$ (g)	11.3
$m_{acceptor}$ (g) → amylose	1.69
$m_{COPO\ estimated}$ (g)	2.59
$m_{COPOtheor}$ (g)	7.24
Yield (%)	**35.8**

Dextran-*b*-alternan-*b*-amylose	
Reaction volume (mL)	1
Enzyme	DSR-M
Units number	1
$m_{sucrose}$ (g)	0.1
$m_{acceptor}$ (g) → alternan-*b*-amylose	0.015
$m_{COPO\ estimated}$ (g)	0.028
$m_{COPOtheor}$ (g)	0.062
Yield (%)	**45.2**

Dextran-*b*-alternan	
Reaction volume (mL)	12
Enzyme	DSR-M
Units number	12
$m_{sucrose}$ (g)	1.2
$m_{acceptor}$ (g) → alternan	0.18
$m_{COPO\ estimated}$ (g)	0.332
$m_{COPOtheor}$ (g)	0.75

Yield (%)	**44.3**