Electronic Supplementary Material (ESI) for Green Chemistry.

Supplementary Information

Reactive extraction of fructose for efficient separation of sucrose-derived glucosides produced by enzymatic glycosylation

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Extraction of D-fructose (Fru) with different organic phases

Table S1: Relative amount of Fru removed to organic phase depending on the organic phase used. Each organic phase contained 100 mM boronic acid and 200 mM Aliquat 336. The extraction time was 5 min. The aqueous phase was made of raw Glycoin® diluted 3-fold with 0.3 M Na_2CO_3-$NaHCO_3$ buffer (pH ~10.5). The Fru concentration was 125 mM.

Organic phase	Phase ratio[a]	E_{Fru} [%]
1-octanol/hexane (4/1 v/v)	1/1	45.46 ± 0.44
1-octanol/heptane (4/1 v/v)	1/1	45.92 ± 0.23
1-octanol/cyclohexane (4/1 v:v)	1/1	45.82 ± 0.80

[a]Phase ratio of aqueous to organic phase

Glucosyl glycerol (2-GG), which was present in nearly equimolar amounts to Fru (around 112 mM), was not extracted in detectable amounts. A selective separation of fructose from 2-GG can be thus achieved with all three organic phases. After extraction, the organic phases were stripped with 0.15 M HCl solution at a phase ratio of 1/1. Stripping was similar for all three organic phases. >90% of fructose were recovered into the stripping phase.