**Figure S1.** Mass balance for sugarcane bagasse components during alkaline-sulfite chemothermomechanical pretreatment followed by GAX extraction based on the enzymatic method and enzymatic hydrolysis of unwashed pretreated solids.
**Figure S2.** Mass balance for sugarcane bagasse components during alkaline-sulfite chemothermomechanical pretreatment followed by GAX extraction based on the De Lopez method and enzymatic hydrolysis of unwashed pretreated solids.
**Figure S3.** Mass balance for sugarcane bagasse components during alkaline-sulfite chemothermomechanical pretreatment followed by GAX extraction based on the Hoije method and enzymatic hydrolysis of unwashed pretreated solids.

- **Untreated Bagasse**
  - 100 g with
    - 40.4 Glucan
    - 30.8 GAX
    - 21.1 Lignin

- **Unwashed Solids**
  - 88.6 g with
    - 40.0 Glucan
    - 28.6 GAX
    - 12.0 Lignin

- **Hoije GAX extraction**
  - 18.1 g with
    - 0.9 Glucan
    - 13.7 GAX
    - 1.5 Lignin

- **Glucan enriched substrate**
  - 43.7 g with
    - 32.4 Glucan
    - 6.6 GAX
    - 3.1 Lignin

- **Enzymatic hydrolysis at low enzyme dosage**
  - **Residual solids (by difference)**
    - 9.4 Glucan
    - 3.9 GAX
    - 3.1 Lignin

- **First process wastewater (by difference)**
  - 0.4 Glucan
  - 2.2 GAX
  - 9.1 Lignosulfonate

- **Second process wastewater (by difference)**
  - 6.7 Glucan
  - 8.3 GAX
  - 7.4 Lignin

- **Hydrolysate monosaccharides**
  - 23.0 Glucose as glucan
  - 2.7 Xylose as xylan
Figure S4. Mass balance for sugarcane bagasse components during alkaline-sulfite chemothermomechanical pretreatment followed by enzymatic hydrolysis of unwashed pretreated solids.
Untreated Bagasse

\[ \text{Na}_2\text{SO}_3/\text{NaOH} \]
CTMP pretreatment

Washed Solids

Enzymatic hydrolysis
at low enzyme dosage
without previous
GAX extraction

100 g with
40.4 Glucan
30.8 GAX
21.1 Lignin

First process wastewater
(by difference)

2.7 Glucan
10.0 GAX
11.1 Lignosulfonate

75.8 g with
37.7 Glucan
20.8 GAX
10.0 Lignin

Residual solids
(by difference)

24.5 Glucan
15.8 GAX
10.0 Lignin

Hydrolysate monosaccharides

13.2 Glucose as glucan
5.1 Xylose as xylan

**Figure S5.** Mass balance for sugarcane bagasse components during alkaline-sulfite chemothermomechanical pretreatment followed by extensive washing and enzymatic hydrolysis of pretreated solids