

Sustainable conversion of lignocellulose hydrolysates without detoxification treatment to biodegradable poly (3-hydroxybutyrate) by a *Halomonas venusta* DSM4743 cell factory

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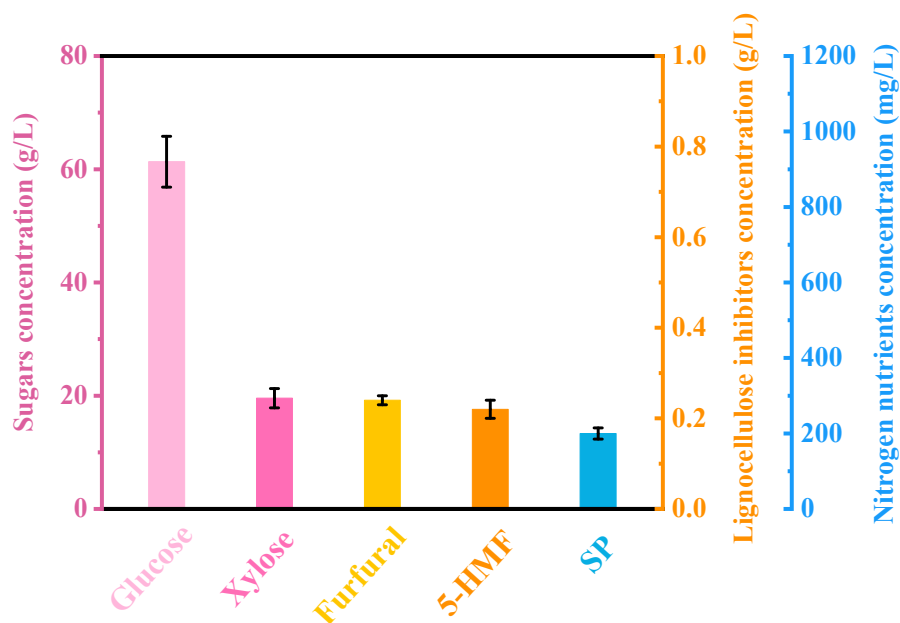


Figure S1 Content of each component of rubberwood hydrolysates

Table S1 Molecular weight and thermal property parameters of commercial and synthetic PHB

| Samples | Mn (Da) | Mw (Da) | PDI | Tdmax (°C) | Residual Mass (%) | Tg (°C) | Tc (°C) | Tm (°C) |
|--------------|---------|---------|------|------------|-------------------|---------|---------|---------|
| Standard PHB | 82529 | 166718 | 2.02 | 298.0 | 8.7 | — | 83.1 | 174.2 |
| Sample PHB | 70631 | 143954 | 2.04 | 264.8 | 13.9 | -25.84 | 58.7 | 164.4 |

Table S2 Data sheet for the mechanical properties of the synthetic PHB film

| Substrates | Tensile Strength (MPa) | Young's Modulus (GPa) | Elongation at break (%) | References |
|-------------------------|------------------------|-----------------------|-------------------------|------------|
| Rubberwood hydrolysates | 17.17 | 3.47 | 1.756 | This Study |
| Glucose | 9.99 | 1.28 | 1.39 | 1 |
| Glucose | 17.01 | 1.05 | 3.80 | 2 |
| Cooking oil | 8.90 | 1.38 | 13.40 | 3 |
| Glucose | 9.98 | — | 1.59 | 4 |

References

- 1 Cristea, M. Pustan, C. Birleanu, C. Dudescu, C. G. Floare, A.-M. Tripon and H. L. Banciu, *J. Polym. Environ.*, 2022, **30**, 424-430.
- 2 Lukasiewicz, P. Basnett, R. Nigmatullin, R. Matharu, J. C. Knowles and I. Roy, *Acta Biomater.*, 2018, **71**, 225-234.
- 3 Esmail, J. R. Pereira, C. Sevrin, C. Grandfils, U. D. Menda, E. Fortunato, A. Oliva and F. Freitas, *Life-Basel*, 2021, **11**, 935-951.
- 4 S. de Andrade, G. G. Fonseca, L. H. I. Mei and F. M. Fakhouri, *J. Appl. Polym. Sci.*, 2017, **134**, 1-8.