

Table S1. Waste liquid digestate composition reported by the “Environmental Prospective” research group of the National University of Colombia - Palmira headquarters.

Parameter	Liquid digestate from acidogenic reactor (Effluent)
VFAs g/L	59.04 ± 0.9
gVFAs/gSV	0.53 ± 0.01
COD _{VFA} /L	85.60 ± 3.32
COD _{soluble} /L	94.90± 9.29
VFAs/COD	0.90
Alkalinity g CaCO ₃ /L	13.54 ± 0.6
N-NH ₃ g/L	12.63 ± 1.0
ST %	10.79 ± 0.78
SV % (bs)	78.11 ± 0.14
Lipids %	22.56 ± 0.47
Acetic acid g/L	24.49 ± 1.82
Propionic acid g/L	7.55 ± 0.47
Isobutyric acid g/L	9.36 ± 0.02
Butyric acid g/L	11.81 ± 0.02
Isovaleric acid g/L	4.37 ± 0.42
Valeric acid g/L	0.08 ± 0.01



Figure S1. Gram staining of *Bacillus megaterium* incubated in Luria Bertani broth for 24 h, at 100x magnification

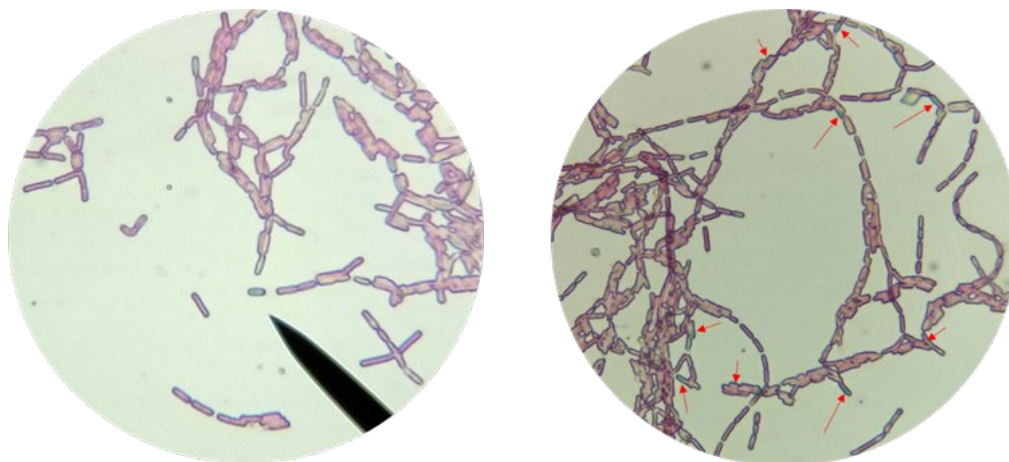


Figure S2. Observation of stained spores from wild-type *Bacillus megaterium* samples grown on nutrient agar under stress conditions (44°C) at 100x magnification.

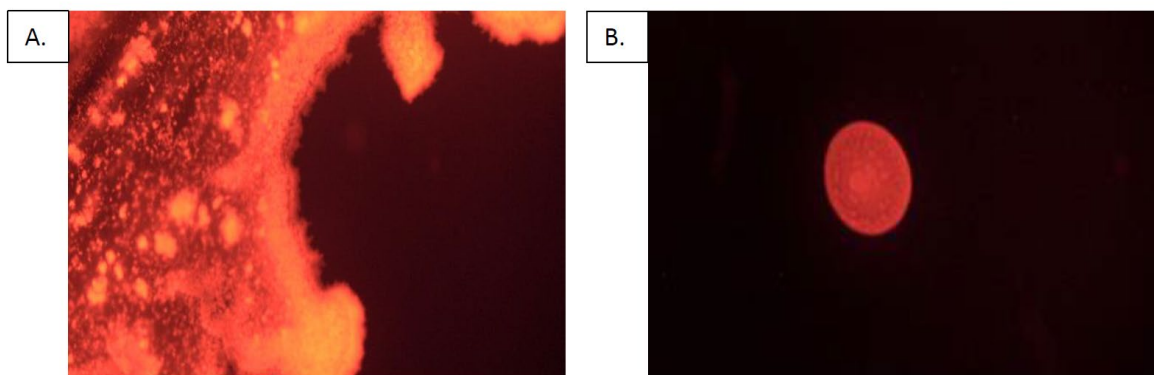


Figure S3. Observation under fluorescence microscope ($\lambda = 510-560$ nm) of growth of wild-type *Bacillus megaterium* adapted to digestate from the homogeneous tank ent from the biogas plant at Tumaco. **A.** Growth on Nile Red agar **B.** Nile Blue staining

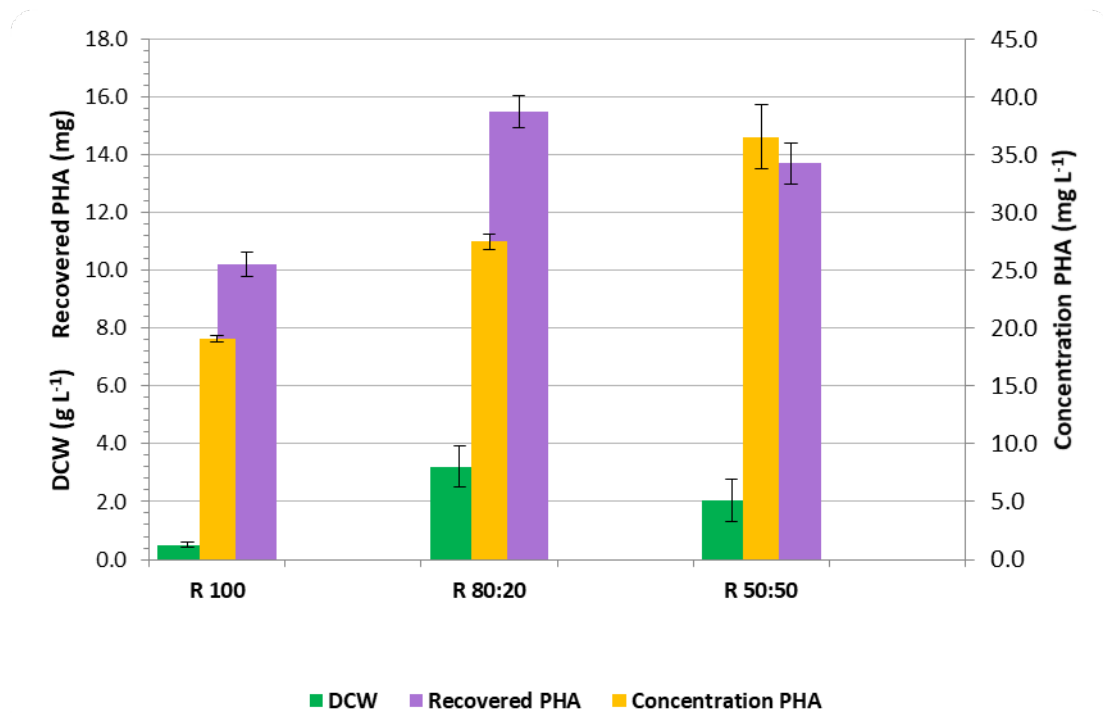


Figure S4. Laboratory-scale experiments for the growth of *B. megaterium* in digestate under the following conditions: pH 7.0, Temperature: 30.8 °C, agitation 200 rpm, and three digestate:MMS ratio conditions 100:0, 80:20, 50:50.

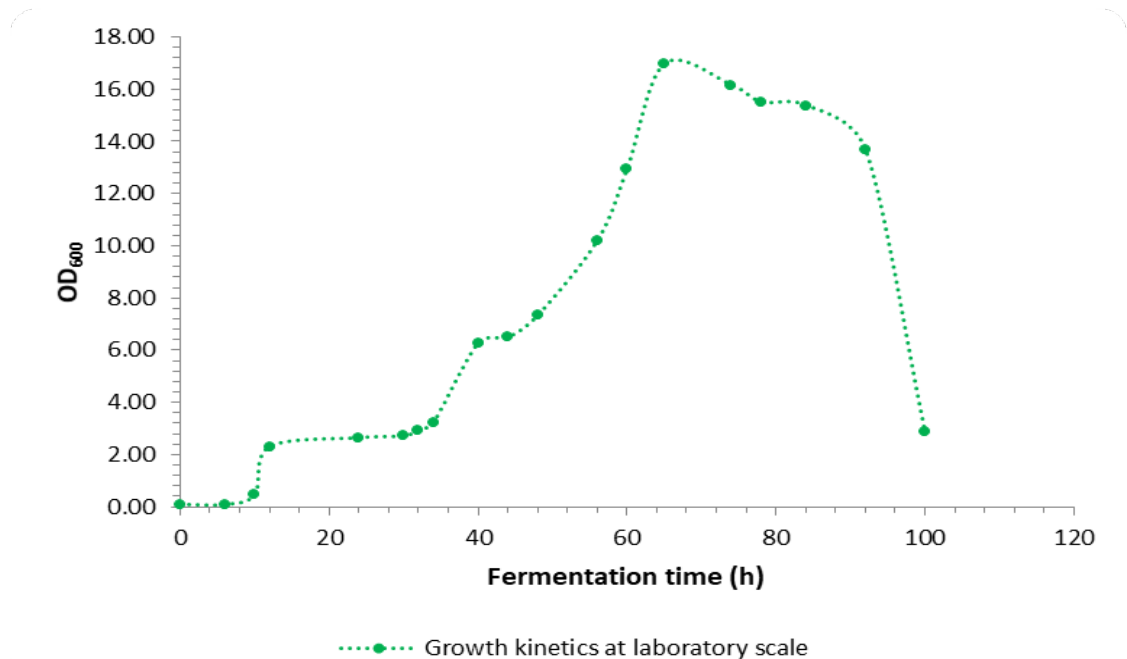


Figure S5. Growth curve at laboratory scale of *B. megaterium* LVN01 in Biogas digestate, operational conditions: 10 mL, 200 rpm, 30.8 °C, pH 7.0.

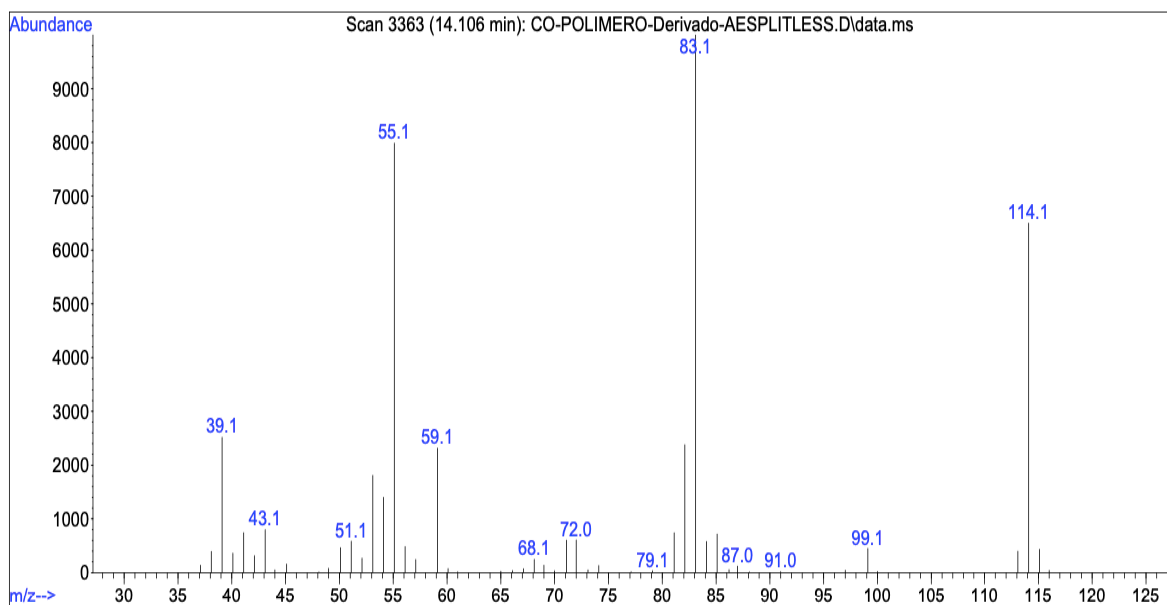


Figure S6. Reconstructed ion current mass spectrum for PHBV obtained from fermentation of *Bacillus megaterium* LVN01 in digestate.

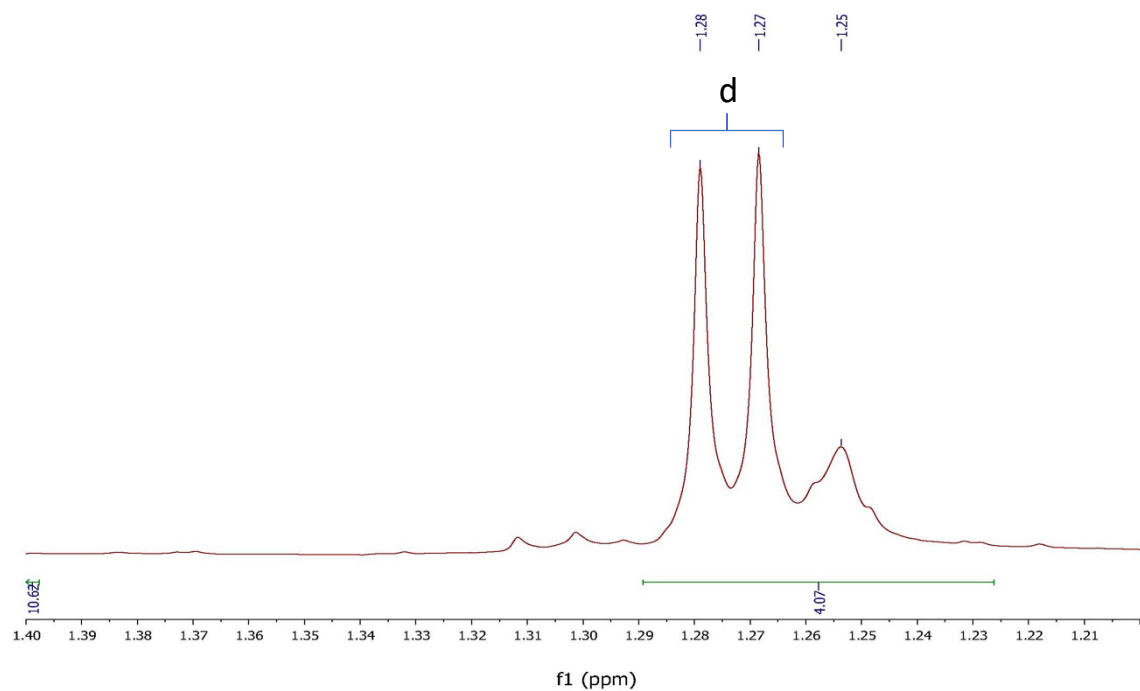


Figure S7 A1. ^1H -NMR spectrum of PHBV commercial standard showing the chemical shift of the characteristic functional group CH_3 in PHB.

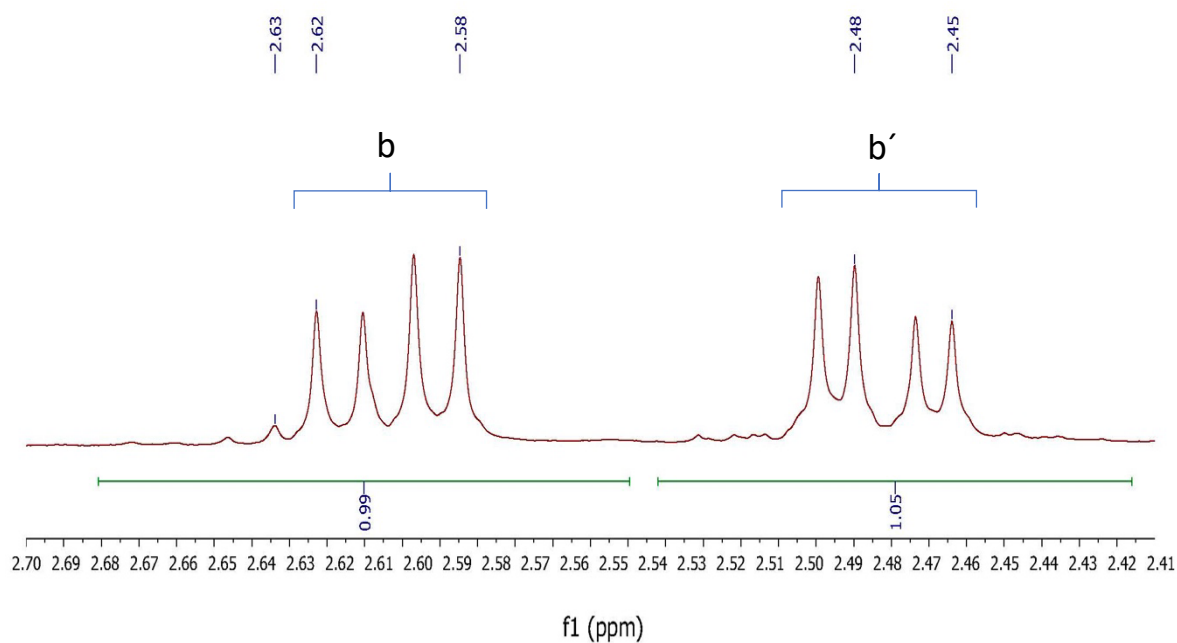


Figure S7 A2. ^1H -NMR spectrum of PHBV commercial standard showing the chemical shift of the characteristic functional group CH_2 in PHV (b') and PHB (b).

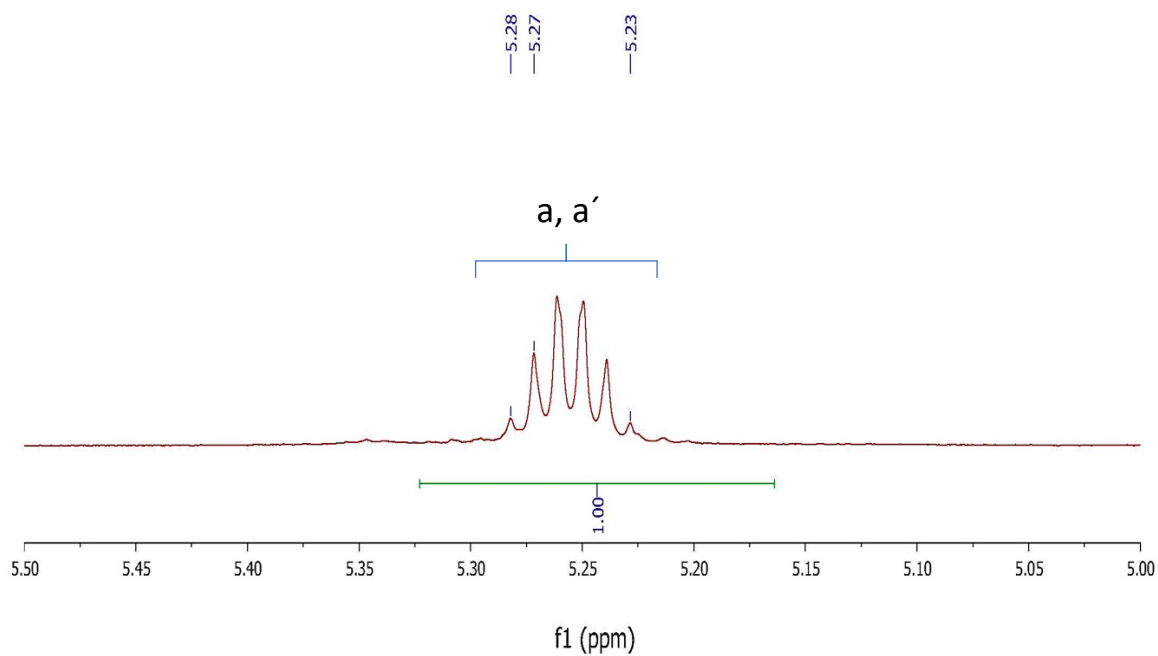


Figure S7 A3. ^1H -NMR spectrum of PHBV commercial standard showing the chemical shift of the characteristic functional group CH in PHV and PHB (a, a').

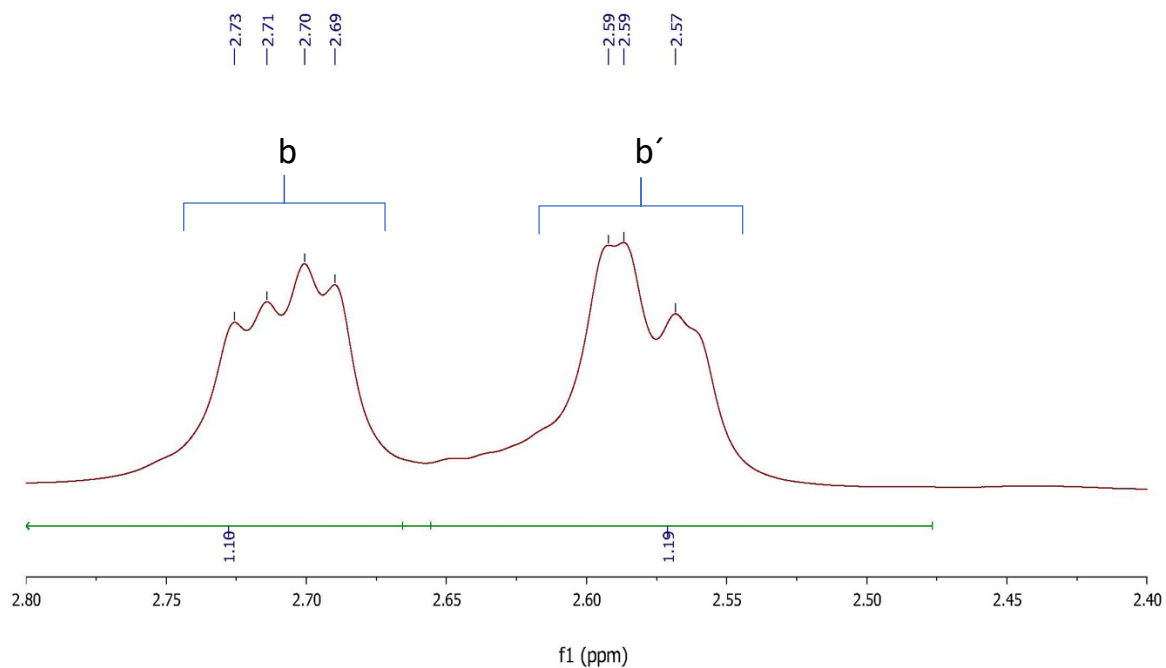


Figure S7 B1. ^1H -NMR spectrum of PHBV synthesized by *B. megaterium* LVN01 from biogas digestate (batch fermentation), showing the chemical shift of the characteristic functional group CH_2 in PHV (b') and PHB (b).

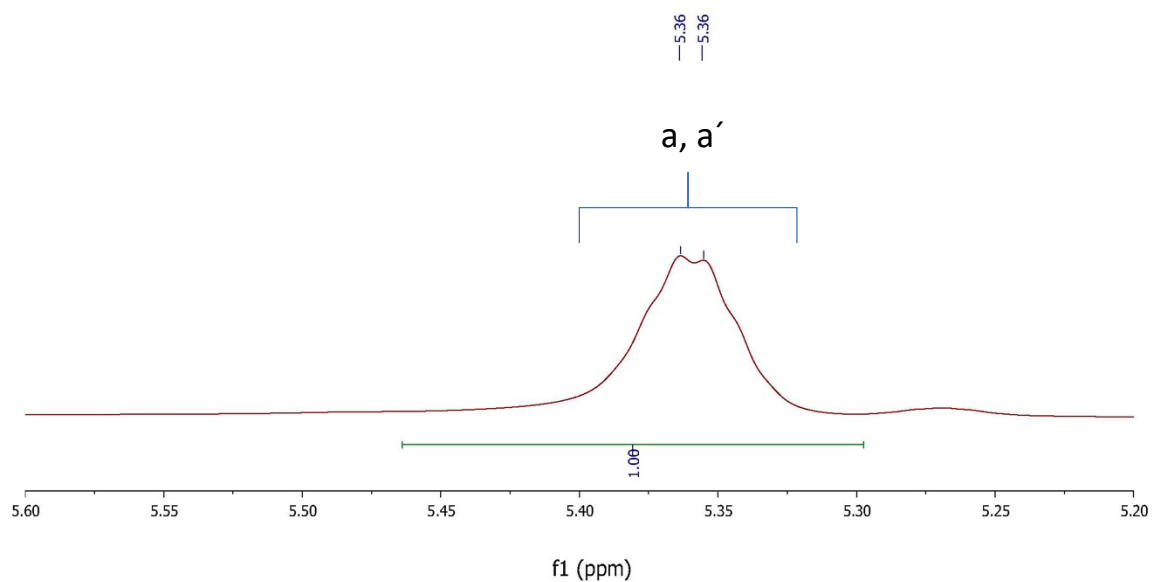


Figure S7 B2. ^1H -NMR spectrum of PHBV synthesized by *B. megaterium* LVN01 from biogas digestate (batch fermentation), showing the chemical shift of the characteristic functional group CH in PHV and PHB (a, a').