Table S1. Chemical parameters detected in samples of Trial I and Trial II. **Table S2.** Main microbial groups counted in Trial I and Trial II samples during fermentation. **Table S3.** Evaluation of tested samples inhibition (as %) on COXs enzymes.
Figure S1. Evaluation of inhibition (as %) of different HT concentrations on oCOX-1 and hCOX-2. **Figure S2.** a) Trial I at the end of fermentation; b) Cartons filters after the spinning process and samples from trial II; c) Sample of Trial II after the fermentation process. **Figure S3.** OMWW samples microfiltered at 0.22 μm.

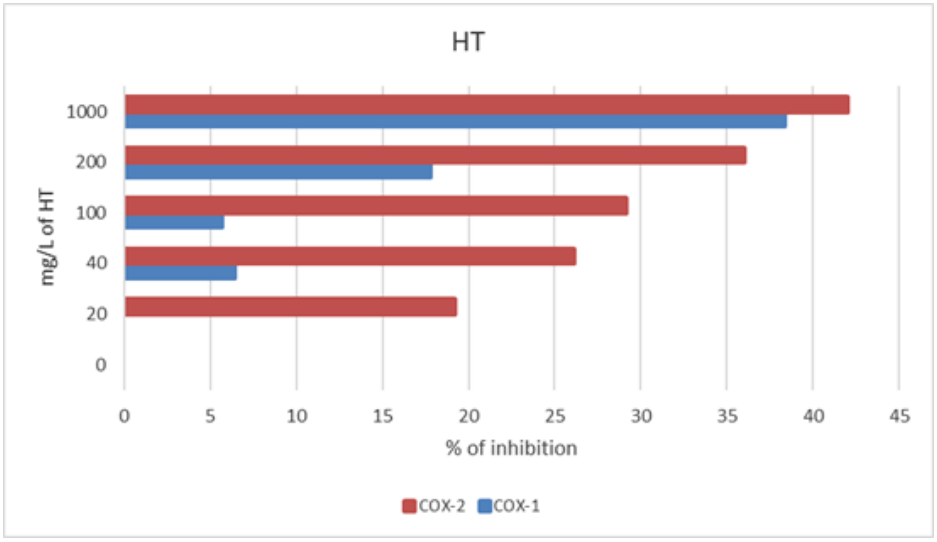

Figure S1

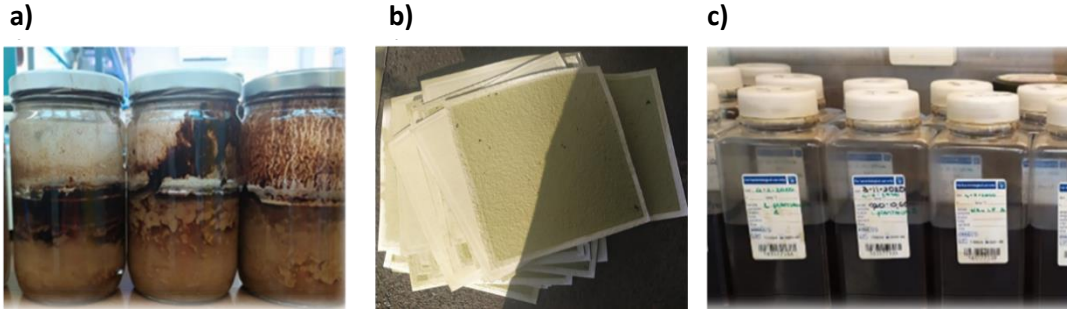

Figure S2

Figure S3

Table S1

Sample	Time (days)	pH	TSS (°Brix)	Total phenol (mg/L)	HT (mg/L)	TYR (mg/L)
Trial I						
Control	0	5.05 ± 0.01	7.77 ±0.02^{b}	2449.8 ± 0.25^{d}	410.1 ± 4.43^{a}	76.4 ± 0.46^{a}
L. plantarum	0	5.02 ± 0.01	7.72 ±0.01^{b}	2596.0 ± 1.42^{b}	285.4 ± 42.61^{bc}	68.2 ± 0.82^{bc}
C. boidinii	0	5.01 ± 0.01	7.73 ±0.08^{b}	2515.9 ± 0.15^{c}	415.2 ± 14.38^{a}	54.7 ± 1.49^{d}
W. anomalus	0	5.01 ± 0.01	8.21 ±0.02^{a}	2638.4 ± 0.59^{b}	373.9 ± 14.19^{a}	52.5 ± 3.28^{d}
L.p+ W.a	0	5.02 ± 0.02	7.08 ±0.01^{c}	2459.4 ± 0.79^{c}	345.2 ± 14.90^{ab}	61.5 ± 0.52^{c}
L.p+C.b	0	5.03 ± 0.01	8.32 ± 0.08^{a}	2654.7 ± 1.80^{b}	105.2 ± 2.66^{d}	54.3 ± 2.29^{d}
L.p+W.a+C.b	0	5.10 ± 0.14	8.19 ± 0.11^{a}	2744.9 ± 0.02^{a}	229.5 ± 6.62^{c}	74.6 ± 1.01^{ab}
		n.s	**	**	**	**
Control	8	4.85 ± 0.01^{a}	6.27 ± 0.08^{a}	2037.5 ± 2.08^{d}	252.5 ± 1.05^{b}	89.8 ± 6.42
L. plantarum	8	4.76 ± 0.03^{ab}	5.65 ± 0.06^{b}	1584.7 ± 0.41^{e}	174.6 ± 2.06^{d}	88.8 ± 3.14
C. boidinii	8	4.45 ± 0.07^{c}	5.79 ± 0.02^{b}	2893.4 ± 7.62^{a}	305.2 ± 14.17^{a}	98.2 ± 7.38
W. anomalus	8	4.82 ± 0.03^{a}	5.73 ± 0.09^{b}	2336.3 ± 0.41^{b}	224.4 ± 0.93^{c}	113.1 ± 16.44
L.p+ W.a	8	4.69 ± 0.01^{b}	5.19 ±0.01^{c}	2363.6 ± 3.39^{b}	267.9 ± 2.20^{b}	112.7 ± 4.63
L.p+C.b	8	4.76 ± 0.01^{ab}	6.19 ±0.05^{a}	2047.2 ± 6.69^{d}	266.8 ± 3.65^{b}	103.2 ± 1.76
L.p+W.a+C.b	8	4.64 ± 0.01^{b}	6.16 ± 0.08^{a}	2191.8 ± 2.49^{c}	300.0 ± 3.08^{a}	108.9 ± 2.12
		**	**	***	*	n.s
Control	30	4. 99 ± 0.02^{b}	6.31 ± 0.14^{a}	2642.5 ± 1.30^{b}	1283.6 ± 23.21^{c}	439.8 ± 67.33^{b}
L. plantarum	30	5.51 ± 0.14^{a}	5.99 ± 0.01^{ab}	2485.1 ± 12.90^{c}	1516.6 ± 153.76^{bc}	511.5 ± 40.51^{ab}
C. boidinii	30	4.81 ± 0.01^{bc}	5.60 ± 0.28^{b}	3135.5 ± 5.23^{ab}	2190.2 ± 155.64^{ab}	679.4 ± 9.71^{a}
W. anomalus	30	4.59 ± 0.01^{cd}	5.95 ± 0.08^{ab}	3241.9 ± 0.13^{a}	2630.4 ± 44.05^{a}	537.8 ± 9.71^{ab}
L.p+ W.a	30	4.55 ± 0.07^{d}	6.07 ± 0.09^{ab}	2555.9 ± 4.30^{b}	1622.1 ± 80.47^{bc}	529.0 ± 12.03^{ab}
L.p+C.b	30	4.71 ± 0.01^{cd}	6.05 ± 0.07^{ab}	2335.6 ± 5.34^{d}	1560.0 ± 80.26^{bc}	508.6 ± 5.84^{ab}
L.p+W.a+C.b	30	4.63 ± 0.05c^{cd}	6.34 ± 0.01^{a}	3129.7 ± 4.63^{ab}	1543.3 ± 244.36^{bc}	539.4 ± 3.24^{ab}
		**	*	**	*	*
Trial II						
Control	0	5.36 ± 0.02^{ab}	7.88 ± 0.16^{bc}	3773.7 ± 7.26^{a}	727.6 ± 39.38^{bc}	382.5 ± 3.54^{b}
L. plantarum	0	5.30 ± 0.14^{ab}	7.67 ± 0.06^{c}	3655.2 ± 0.55^{b}	479.3 ± 31.42^{d}	262.0 ± 7.25^{cd}
C. boidinii	0	5.30 ± 0.01^{ab}	8.05 ± 0.07^{b}	3271.4 ± 14.62^{c}	616.6 ± 60.40^{c}	245.4 ± 12.34^{d}
W. anomalus	0	5.47 ± 0.03^{a}	8.01 ± 0.01^{b}	3778.9 ± 12.59^{a}	402.8 ± 0.08^{d}	528.4 ± 0.39^{a}
L.p+ W.a	0	5.20 ± 0.01^{b}	7.84 ± 0.08^{bc}	3653.1 ± 5.48^{b}	802.3 ± 12.26^{ab}	332.8 ± 47.82^{bc}
L.p+C.b	0	5.37 ± 0.01^{ab}	8.56 ± 0.01^{a}	2957.8 ± 10.03^{e}	874.3 ± 3.34^{a}	245.1 ± 10.16^{d}
L.p+W.a+C.b	0	5.32 ± 0.02^{ab}	8.06 ± 0.08^{b}	3077.2 ± 1.13^{d}	765.9 ± 33.78^{ab}	299.8 ± 5.06^{cd}
		*	**	**	**	**
Control	8	4.35 ± 0.07^{a}	6.47 ± 0.04^{a}	2992.6 ± 1.85^{d}	526.2 ± 4.64^{bcd}	166.2 ± 3.79^{c}
L. plantarum	8	3.97 ± 0.01^{c}	5.64 ± 0.06^{e}	3005.1 ± 7.29^{c}	594.7 ± 0.49^{bc}	211.2 ± 22.84^{b}
C. boidinii	8	4.05 ± 0.01^{c}	6.05 ± 0.07^{cd}	3201.8 ± 1.12^{d}	306.1 ± 0.16^{d}	120.0 ± 0.05^{d}
W. anomalus	8	3.97 ± 0.01^{c}	5.89 ± 0.01^{d}	3261.9 ± 4.15^{b}	393.2 ± 5.78^{cd}	121.7 ± 1.11^{d}
L.p+ W.a	8	4.18 ± 0.01^{b}	5.50 ± 0.01^{e}	3200.7 ± 3.78^{d}	1064.9 ± 15.22^{a}	280.8 ± 4.01^{a}
L.p+C.b	8	3.98 ± 0.01^{c}	6.16 ± 0.08^{bc}	3024.1 ± 28.40^{c}	314.2 ±146.37^{d}	171.8 ± 4.39^{c}
L.p+W.a+C.b	8	3.99 ± 0.01^{c}	6.36 ± 0.05^{ab}	3379.5 ± 26.15^{a}	666.9 ± 12.83^{b}	142.8 ± 3.70^{cd}
		**	**	**	**	**
Control	30	6.29 ± 0.01^{a}	6.50 ± 0.01^{a}	2796.7 ± 1.85^{e}	330.7 ± 2.17^{d}	129.5 ± 0.34^{b}
L. plantarum	30	4.15 ± 0.07^{e}	5.64 ± 0.02^{c}	3577.6 ± 12.40^{a}	840.3 ± 6.68^{b}	126.0 ± 1.38^{b}
C. boidinii	30	5.57 ± 0.01^{b}	5.84 ± 0.06^{bc}	3267.2 ± 2.28^{c}	979.2 ± 8.26^{b}	87.0 ± 0.27^{cd}
W. anomalus	30	5.64 ± 0.06^{b}	5.94 ± 0.08^{b}	3160.4 ± 41.87^{d}	596.3 ± 89.00^{c}	141.4 ± 1.63^{b}
L.p+ W.a	30	5.04 ± 0.06^{c}	5.68 ± 0.11^{c}	3364.1 ± 25.20^{bc}	1235.6 ± 38.93^{a}	306.2 ± 12.98^{a}
L.p+C.b	30	4.54 ± 0.06^{d}	6.05 ± 0.07^{b}	3426.8 ± 16.75^{b}	810.7 ± 87.83^{b}	67.5 ± 0.85^{d}
L.p+W.a+C.b	30	5.59 ± 0.01^{b}	6.36 ± 0.01^{a}	3348.4 ± 39.05^{bc}	827.2 ± 12.99^{b}	100.3 ± 0.11^{c}
		**	**	**	**	**

Data are expressed as Log CFU/mL mean ± standard deviations. Mean values with different letters within the same column at the same time interval are statistically different. N.s. not significant; *Significance at $P < 0.05$; **Significance at $P < 0.01$.

Table S2

Sample	Time (days)	LAB	Yeasts and moulds	Aerobic mesophilic bacteria	Enterobacteriaceae	Staphylococci
Trial I						
Control	0	5.23 ± 0.01^{d}	6.50 ± 0.04^{b}	6.29 ± 0.16^{d}	6.90 ± 0.01^{a}	1.06 ± 0.03^{e}
L. plantarum	0	5.85 ± 0.02^{a}	5.69 ± 0.01^{e}	7.36 ± 0.03^{a}	6.94 ± 0.01^{a}	1.06± 0.03^{e}
C. boidinii	0	5.31 ± 0.01^{c}	5.49 ± 0.01^{f}	5.96 ± 0.01^{e}	6.79 ± 0.01^{b}	3.98 ± 0.03^{b}
W. anomalus	0	4.78 ± 0.04^{f}	5.48 ± 0.01^{f}	7.06 ± 0.08^{b}	6.57 ± 0.03^{c}	2.63 ± 0.21^{d}
L.p+W.a	0	5.48 ± 0.02^{b}	6.19 ± 0.02^{d}	6.85 ± 0.01^{bc}	6.33 ± 0.01^{d}	4.79 ± 0.01^{a}
L.p+C.b	0	5.30 ± 0.04^{c}	6.96 ± 0.01^{a}	6.72 ± 0.03^{c}	6.36 ± 0.02^{d}	3.30 ± 0.01*c*
L.p+W.a+C.b	0	5.15 ± 0.12^{e}	6.28 ± 0.03^{c}	7.50 ± 0.04^{a}	6.57 ± 0.01^{c}	4.59± 0.16^{a}
		**	**	**	**	**
Control	8	6.74 ± 0.03^{a}	8.15 ± 0.21^{a}	8.15 ± 0.21^{a}	5.00± 0.01^{bc}	1.63± 0.40
L. plantarum	8	6.60 ± 0.01^{c}	6.88 ± 0.04^{b}	6.83 ± 0.^{01b}	4.61± 0.01^{c}	3.30 ± 0.43
C. boidinii	8	6.59 ± 0.01^{c}	7.06 ± 0.05^{b}	6.43 ± 0.07^{b}	0.00± 0.01^{d}	4.29± 0.01
W. anomalus	8	6.37 ± 0.02^{e}	6.85 ± 0.01^{b}	6.77 ± 0.01^{c}	6.02± 0.03^{ab}	3.00 ± 0.41
L.p+W.a	8	6.74 ± 0.05^{a}	7.28 ± 0.16^{b}	5.08 ± 0.01^{d}	4.85± 0.01^{c}	3.88 ± 0.03
L.p+C.b	8	6.62 ± 0.08^{b}	7.28 ± 0.31^{b}	6.57 ± 0.01^{bc}	5.34± 0.06^{abc}	4.37 ± 0.27
L.p+W.a+C.b	8	6.48 ± 0.01^{d}	6.98 ± 0.01^{b}	5.35 ± 0.01^{d}	6.17± 0.74*a*	4.12± 0.07
		**	*	**	**	n.s
Control	30	6.43± 0.01^{a}	6.56 ± 0.17^{b}	6.07 ± 0.01^{c}	2.23 ± 0.34^{a}	3.05 ± 0.06^{a}
L. plantarum	30	5.32± 0.05^{bc}	6.35 ± 0.15b^{c}	7.00 ± 0.01^{a}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
C. boidinii	30	4.78 ± 0.06^{c}	6.04 ± 0.15b^{c}	5.72 ± 0.03^{d}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
W. anomalus	30	6.89 ± 0.09^{a}	6.33 ± 0.01b^{c}	6.23 ± 0.02^{c}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
L.p+W.a	30	6.05 ±0.02^{ab}	5.77 ± 0.10^{d}	6.05 ± 0.08^{c}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
L.p+C.b	30	6.44 ± 0.04^{a}	6.41 ± 0.08^{bc}	6.07 ± 0.10^{c}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
L.p+W.a+C.b	30	7.03 ± 0.01^{a}	7.71 ± 0.01^{a}	6.64 ± 0.01^{b}	0.00 ± 0.00^{b}	0.00 ± 0.00^{b}
		*	**	**	**	**
Trial II						
Control	0	1.30 ± 0.01^{e}	2.48 ± 0.01^{c}	5.38 ± 0.55^{bc}	0.00 ± 0.00^{d}	0.00 ± 0.00^{f}
L. plantarum	0	5.80 ± 0.17^{a}	5.41 ± 0.12^{ab}	4.15± 0.21^{e}	2.14 ± 0.09^{ab}	1.06 ± 0.03^{e}
C. boidinii	0	5.75 ± 0.03^{a}	5.51 ± 0.77^{ab}	4.23 ± 0.34^{de}	2.88 ± 0.02 ^{a}	3.97 ± 0.03^{b}
W. anomalus	0	2.00 ± 0.01^{d}	4.82 ± 0.01^{ab}	5.26 ± 0.38^{cde}	1.09 ± 0.12c	2.65 ± 0.21^{d}
L.p+ W.a	0	4.77 ± 0.01^{c}	4.64 ± 0.29^{ab}	5.65 ± 0.11^{ab}	2.77 ± 0.49 ^{a}	4.79 ± 0.01^{a}
L.p.+C.b	0	5.00 ± 0.00^{bc}	4.20 ± 0.04^{c}	7.62 ± 0.04^{a}	1.60 ± 0.09^{bc}	3.30 ± 0.01^{c}
L.p+W.a+C.b	0	5.31 ± 0.20^{b}	5.58 ± 0.19^{a}	6.71 ± 0.02^{ab}	1.02 ± 0.03^{c}	4.84 ± 0.28^{a}
		*	**	**	**	**
Control	8	5.43 ± 0.45^{b}	5.92 ± 0.04^{b}	7.38 ± 0.55^{a}	5.26 ± 0.58	4.60 ± 0.16^{b}
L. plantarum	8	7.91 ± 0.01^{a}	7.84 ± 0.09^{a}	5.82 ± 0.18^{b}	4.17 ± 0.21	0.00 ± 0.00^{d}
C. boidinii	8	7.50 ± 0.04 ^{a}	7.61 ± 0.01^{a}	7.36 ± 0.51^{a}	4.20 ± 0.24	3.00 ± 0.00^{c}
W. anomalus	8	7.91 ± 0.01 ^{a}	7.50 ± 0.65^{a}	7.84 ± 0.09^{a}	4.39 ± 0.43	3.39 ± 0.43^{c}
L.p+W.a	8	7.58 ± 0.17 ^{a}	7.47 ± 0.49^{a}	7.49 ± 0.02^{a}	4.38 ± 0.41	4.38 ± 0.41^{b}
L.p.+C.b	8	7.62 ± 0.01 ^{a}	7.00 ± 0.21^{ab}	7.00 ± 0.01^{a}	4.60 ± 0.01	3.90 ± 0.03^{bc}
L.p+W.a+C.b	8	7.61 ± 0.02 ^{a}	7.85 ± 0.19^{a}	5.30 ± 0.01^{b}	4.04 ± 0.06	5.72 ± 0.03^{a}
		**	*	**	n.s	**
Control	30	7.77 ± 0.01 ^{a}	7.84 ± 0.01^{d}	7.75 ± 0.01^{b}	0.00 ± 0.00	0.00 ± 0.00
L. plantarum	30	7.36 ± 0.08 ^{a}	7.29 ± 0.02^{f}	7.30 ± 0.01^{c}	0.00 ± 0.00	0.00 ± 0.00
C. boidinii	30	7.72 ± 0.03 ^{a}	8.00 ± 0.01^{c}	7.31 ± 0.01^{c}	0.00 ± 0.00	0.00 ± 0.00
W. anomalus	30	5.00 ±0.01^{b}	6.00 ± 0.01^{g}	7.86 ± 0.03^{a}	0.00 ± 0.00	0.00 ± 0.00
L.p+W.a	30	8.44 ± 0.66 ^{a}	8.77 ± 0.02^{b}	7.30 ± 0.01^{c}	0.00 ± 0.00	0.00 ± 0.00
L.p+C.b	30	7.80 ± 0.04 ^{a}	9.00 ± 0.01^{a}	7.86 ± 0.01 ^{a}	0.00 ± 0.00	0.00 ± 0.00
L.p+W.a+C.b	30	7.30 ± 0.01 ^{a}	7.43 ± 0.03^{e}	7.31 ± 0.03^{c}	0.00 ± 0.00	0.00 ± 0.00
		**	**	**	n.s	n.s

Data are expressed as Log CFU/mL mean ± standard deviations. Mean values with different letters within the same column at the same time interval are statistically different. N.s. not significant; *Significance at $P < 0.05$; **Significance at $P < 0.01$.

Table S3

Samples	Concentration of HT (mg/L)	Inhibition *o*COX-1 (%)	Inhibition *h*COX-2 (%)
Control	6.80	0.00	0.00
L.planturum	37.02	5 .09	0.00
C. boidinii	36.09	15.96	12.95
W. anomalus	31.72	1.32	3.27
L.p + W.a	32.06	0.19	0.86
L.p + C.b	36.13	8.20	0.00
L.p + W.a + C.b	30.71	0.00	5.78