

Figure S1 Image (A) and schematic diagram (B) of the instant catapult steam explosion (ICSE) apparatus

Table S1 Temperature, pressure, retention time, and pretreatment severity (LogR₀) of steam explosion treatments evaluated in this study

Temperature	Pressure	Time	LogR ₀ ^a
°C	MPa	Min	
160	0.6	1	1.77
		3	2.24
		5	2.47
175	0.9	1	2.21
		3	2.69
		5	2.91
190	1.3	1	2.65
		3	3.13
		5	3.35
205	1.7	1	3.09
		3	3.57
		5	3.79
220	2.3	1	3.53
		3	4.01
		5	4.23

^a Pretreatment severity (LogR₀) is defined as $\log R_0 = \log (t \times e^{\frac{T-100}{14.75}})$, where t is the pretreatment time in minutes and T is the pretreatment temperature in degrees Celsius.

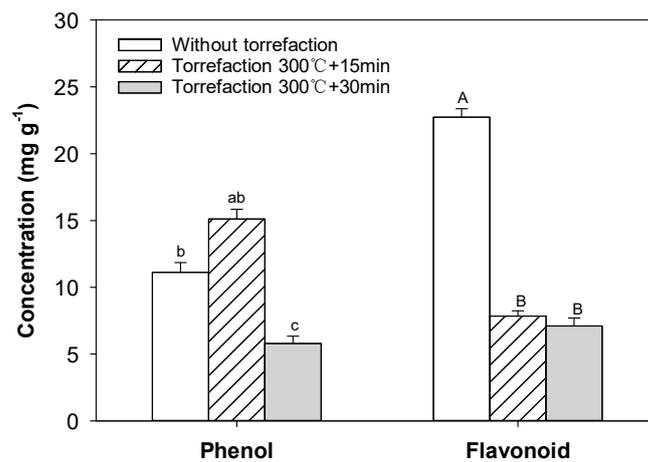


Figure S2 Concentration total phenol and total flavonoid in pruning waste treated by steam explosion at 160°C+3 min with and without torrefaction. Data represents mean \pm SE. Different lower-case and upper-case letters indicate significant differences among treatments for phenol and flavonoid, respectively, at $\alpha=0.05$.