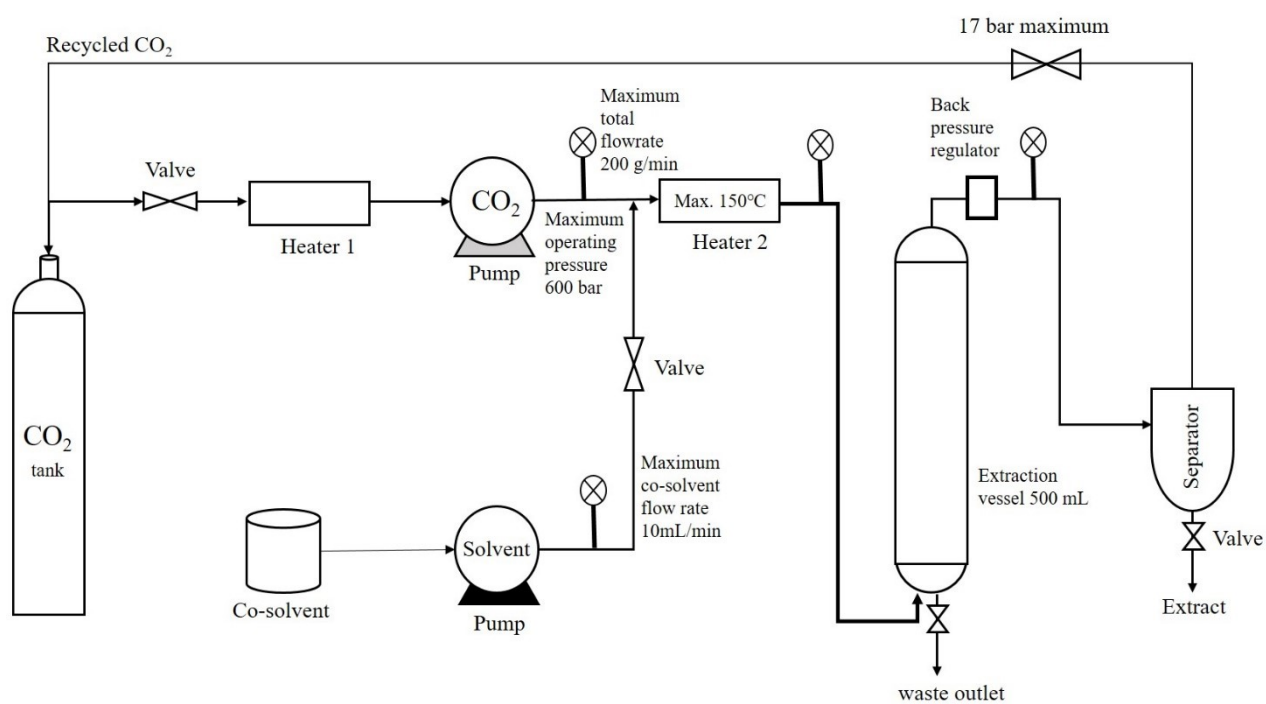


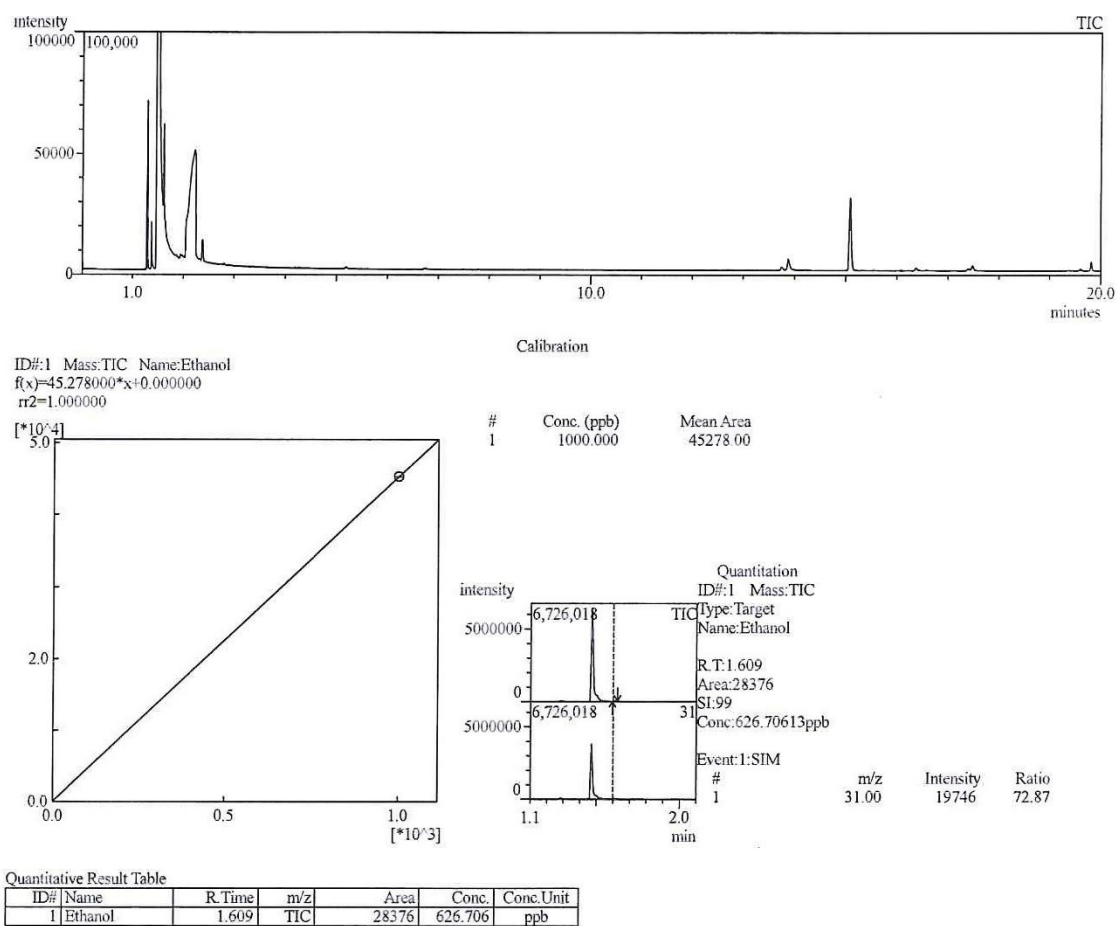
**Table S1:** Fatty acid composition of high-yielding SFE-mediated extraction of oleoresin at 30MPa

| Fatty acid                                 | Retention Time (min) | RI*  | RI** | Content g/100g            |
|--------------------------------------------|----------------------|------|------|---------------------------|
| Capric acids (C10:0)                       | 15.18                | 2285 | 2279 | 0.18 ± 0.01 <sup>d</sup>  |
| Undecanoic acid (C11:0)                    | 17.044               | 2392 | 2398 | 7.04 ± 0.28 <sup>a</sup>  |
| Lauric acid (C12:0)                        | 18.613               | 2507 | 2502 | 0.96 ± 0.05 <sup>c</sup>  |
| Myristic acid (C14:0)                      | 21.792               | 2708 | 2712 | 0.14 ± 0.01 <sup>d</sup>  |
| Pentadecanoic acid (C15:0)                 | 23.396               | 2811 | 2819 | BLQ (LOQ: 0.10)           |
| Palmitic acid (C16:0)                      | 24.991               | 2890 | 2900 | 4.03 ± 0.15 <sup>b</sup>  |
| Palmitoleic acid (C16:1n-7)                | 25.552               | 2964 | 2960 | 0.16 ± 0.01 <sup>d</sup>  |
| Heptadecanoic acid (C17:0)                 | 26.556               | 3023 | 3027 | BLQ (LOQ: 0.10)           |
| Stearic acid (C18:0)                       | 28.085               | 3141 | 3136 | 1.10 ± 0.06 <sup>c</sup>  |
| trans 9-elaidic acid (C18:1nt-9)           | 28.346               | 3169 | 3173 | 0.27 ± 0.02 <sup>d</sup>  |
| Oleic acid (C18:1n-9)                      | 28.565               | 3180 | 3176 | 38.29 ± 1.35 <sup>a</sup> |
| Linoleic acid (C18:2n-6)                   | 29.366               | 3188 | 3184 | 6.83 ± 0.28 <sup>b</sup>  |
| Alpha-Linolenic acid (C18:3n-3)            | 30.381               | 3296 | 3292 | 0.96 ± 0.05 <sup>c</sup>  |
| Arachidic acid (C20:0)                     | 31.015               | 3334 | NA   | 0.17 ± 0.01 <sup>d</sup>  |
| Cis-11-Eicosenoic acid (C20:1n-9)          | 31.464               | 3372 | NA   | BLQ (LOQ: 0.10)           |
| Cis-8,11,14-Eicosatrienoic acid (C20:3n-6) | 32.808               | 3484 | NA   | 0.73 ± 0.04 <sup>c</sup>  |
| Behenic acid (C22:0)                       | 33.717               | 3533 | NA   | BLQ (LOQ: 0.10)           |
| Cis 13,16-Docosadienoic acid (C22:2n-6)    | 34.991               | 3575 | NA   | BLQ (LOQ: 0.10)           |
| Lignoceric acid (C24:0)                    | 36.216               | 3732 | NA   | 0.17 ± 0.01 <sup>d</sup>  |

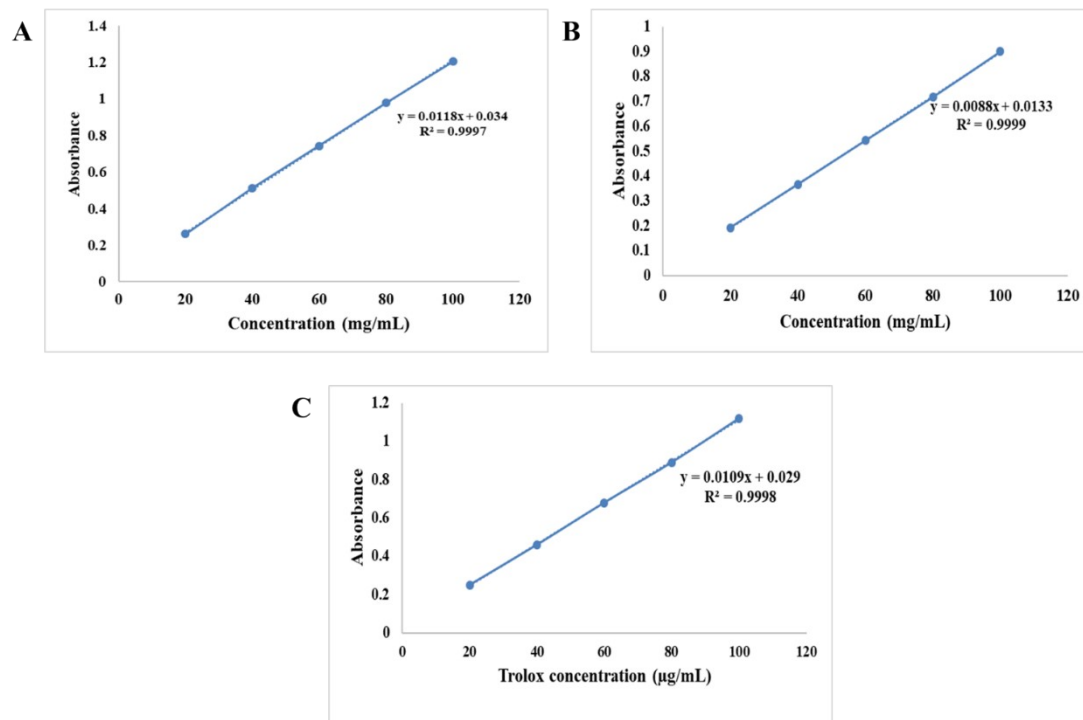
NA-Not Available; BLQ- Below Limit of Quantification; LOQ-Limit of Quantification; RI\*-Retention Index Experimental; RI\*\*-Retention Index Literature; All analyses were performed using three independent experiments (n=3), with each independent experiment consisting of triplicate injections (technical replicates), resulting in nine measurements per fatty acid. Reported values represent mean ± standard deviation from three independent experiments.



**Fig S1.** A schematic diagram of the SFE extractor with major components



**Fig S2.** HS-GC chromatogram and quantitative analysis of residual ethanol in black cardamom oleoresin extracted using SFE.



**Fig. S3 A.** Standard calibration curve of gallic acid (TPC), **B.** quercetin (TFC), **C.** Trolox concentration (FRAP)