

**Table S1.** Moisture content (%) of sunflower seeds.

Fractions	Moisture content (%)	
	Striped seed	Black oil seed
Raw	3.43±0.01	3.42±0.01
S2	24.52±0.12	24.46±0.12
S12	29.03±0.24	29.03±0.25
S24	28.59±0.07	28.53±0.07
G24	29.24±0.04	29.23±0.04
G48	42.86±0.06	42.86±0.06
R5	1.62±0.04	1.75±0.08
R6	1.31±0.17	1.90±0.11
R7	1.60±0.02	1.33±0.09

Values are expressed as mean ± SD (n = 3) of triplicate measurement. S2, soaked 2 hours; S12, soaked 12 hours; S24, soaked 24 hours; G24, germinated at 24 hours; G48, germinated at 48 hours; R5, roasted at 5 minutes; R6, roasted at 6 minutes; R7, roasted at 7 minutes.

**Table S2.** Fatty acid composition (% total fatty acids) of raw and processed black oil seeds.

Fractions	Fatty acid composition (%)								Total
	16:0	18:0	18:1	18:2	18:3	ΣSFA	ΣMUFA	ΣPUFA	
Raw	6.08±0.03 <sup>b</sup>	3.11±0.04 <sup>b</sup>	32.53±0.36 <sup>ab</sup>	56.57±0.31 <sup>de</sup>	1.75±0.06 <sup>a</sup>	9.15±0.01 <sup>bc</sup>	32.53±0.36 <sup>ab</sup>	58.33±0.35 <sup>b</sup>	100
S2	5.86±0.14 <sup>cd</sup>	2.91±0.06 <sup>c</sup>	33.06±0.34 <sup>a</sup>	56.87±0.54 <sup>d</sup>	1.30±0.03 <sup>e</sup>	8.77±0.20 <sup>ef</sup>	33.06±0.34 <sup>a</sup>	58.17±0.51 <sup>bc</sup>	100
S12	6.00±0.03 <sup>bc</sup>	2.90±0.01 <sup>c</sup>	32.52±0.18 <sup>ab</sup>	57.34±0.20 <sup>cd</sup>	1.24±0.02 <sup>f</sup>	8.90±0.03 <sup>de</sup>	32.52±0.18 <sup>ab</sup>	58.58±0.21 <sup>b</sup>	100
S24	6.44±0.17 <sup>a</sup>	3.05±0.01 <sup>b</sup>	32.98±0.25 <sup>a</sup>	55.90±0.15 <sup>e</sup>	1.63±0.02 <sup>b</sup>	9.49±0.18 <sup>a</sup>	32.98±0.25 <sup>a</sup>	57.53±0.15 <sup>c</sup>	100
G24	5.84±0.12 <sup>cd</sup>	2.88±0.03 <sup>c</sup>	31.78±0.06 <sup>c</sup>	57.95±0.17 <sup>bc</sup>	1.54±0.04 <sup>c</sup>	8.73±0.14 <sup>ef</sup>	31.78±0.06 <sup>c</sup>	59.49±0.13 <sup>a</sup>	100
G48	5.73±0.03 <sup>d</sup>	2.84±0.04 <sup>c</sup>	31.98±0.48 <sup>bc</sup>	58.30±0.49 <sup>b</sup>	1.15±0.02 <sup>g</sup>	8.57±0.02 <sup>f</sup>	31.98±0.48 <sup>bc</sup>	59.45±0.50 <sup>a</sup>	100
R5	5.98±0.13 <sup>bc</sup>	3.03±0.03 <sup>b</sup>	31.55±0.65 <sup>c</sup>	58.22±0.80 <sup>b</sup>	1.22±0.01 <sup>f</sup>	9.02±0.15 <sup>cd</sup>	31.55±0.65 <sup>c</sup>	59.44±0.80 <sup>a</sup>	100
R6	6.38±0.02 <sup>a</sup>	3.07±0.06 <sup>b</sup>	30.36±0.17 <sup>d</sup>	59.37±0.26 <sup>a</sup>	0.81±0.01 <sup>h</sup>	9.46±0.08 <sup>a</sup>	30.36±0.17 <sup>d</sup>	60.19±0.25 <sup>a</sup>	100
R7	6.12±0.04 <sup>b</sup>	3.17±0.05 <sup>a</sup>	31.17±0.33 <sup>bc</sup>	57.12±0.37 <sup>d</sup>	1.42±0.02 <sup>d</sup>	9.29±0.05 <sup>ab</sup>	31.17±0.33 <sup>bc</sup>	58.54±0.38 <sup>b</sup>	100

Values are expressed as mean ± SD (n = 3) of triplicate measurement. Superscripts with different letters are significantly different at  $p < 0.05$  within the same column. S2, soaked 2 hours; S12, soaked 12 hours; S24, soaked 24 hours; G24, germinated at 24 hours; G48, germinated at 48 hours; R5, roasted at 5 minutes; R6, roasted at 6 minutes; R7, roasted at 7 minutes.

**Table S3.** Fatty acids concentrations (mg/100g) of raw and processed black oil sunflower seeds.

Fractions	Fatty acids concentrations (mg/100g)								Total
	16:0	18:0	18:1	18:2	18:3	ΣSFA	ΣMUFA	ΣPUFA	
Raw	52.78±0.32 <sup>f</sup>	26.60±0.33 <sup>h</sup>	282.29±3.34 <sup>h</sup>	491.00±2.35 <sup>f</sup>	15.21±0.48 <sup>e</sup>	79.38±0.02 <sup>g</sup>	282.29±3.34 <sup>h</sup>	506.21±2.76 <sup>f</sup>	867.89±1.07 <sup>h</sup>
S2	111.42±1.27 <sup>b</sup>	55.42±0.27 <sup>c</sup>	628.90±4.39 <sup>b</sup>	1082.15±27.89 <sup>b</sup>	24.66±0.24 <sup>b</sup>	166.84±1.46 <sup>b</sup>	628.90±4.39 <sup>b</sup>	1106.81±27.72 <sup>b</sup>	1902.55±30.83 <sup>b</sup>
S12	64.87±0.37 <sup>e</sup>	31.38±0.16 <sup>g</sup>	351.83±2.35 <sup>g</sup>	620.29±3.61 <sup>e</sup>	13.47±0.23 <sup>f</sup>	96.25±0.49 <sup>f</sup>	351.83±2.35 <sup>g</sup>	633.76±3.84 <sup>e</sup>	1081.84±4.77 <sup>g</sup>
S24	28.65±0.77 <sup>g</sup>	13.58±0.07 <sup>i</sup>	146.70±1.93 <sup>i</sup>	248.65±0.97 <sup>g</sup>	7.25±0.09 <sup>h</sup>	42.23±0.82 <sup>h</sup>	146.70±1.93 <sup>i</sup>	255.90±1.03 <sup>g</sup>	444.82±2.94 <sup>i</sup>
G24	104.55±1.09 <sup>c</sup>	51.61±0.27 <sup>d</sup>	568.60±8.30 <sup>d</sup>	1036.88±17.86 <sup>c</sup>	27.50±0.39 <sup>a</sup>	156.15±0.94 <sup>c</sup>	568.60±8.30 <sup>d</sup>	1064.38±17.59 <sup>c</sup>	1789.13±25.68 <sup>d</sup>
G48	120.41±1.44 <sup>a</sup>	59.60±0.46 <sup>a</sup>	671.90±4.19 <sup>a</sup>	1224.84±22.23 <sup>a</sup>	24.17±0.47 <sup>b</sup>	180.01±1.31 <sup>a</sup>	671.90±4.19 <sup>a</sup>	1249.00±22.57 <sup>a</sup>	2100.92±20.67 <sup>a</sup>
R5	111.52±1.76 <sup>b</sup>	56.56±0.42 <sup>b</sup>	588.10±8.64 <sup>c</sup>	1085.44±21.22 <sup>b</sup>	22.78±0.05 <sup>c</sup>	168.08±1.82 <sup>b</sup>	588.10±8.64 <sup>c</sup>	1108.22±21.26 <sup>b</sup>	1864.39±10.99 <sup>c</sup>
R6	88.75±0.73 <sup>d</sup>	42.73±0.47 <sup>g</sup>	422.08±2.45 <sup>f</sup>	825.60±13.00 <sup>d</sup>	11.28±0.08 <sup>g</sup>	131.48±0.38 <sup>e</sup>	422.08±2.45 <sup>f</sup>	836.89±12.92 <sup>d</sup>	1390.45±15.71 <sup>f</sup>
R7	89.38±0.86 <sup>d</sup>	46.23±0.29 <sup>e</sup>	469.45±2.37 <sup>e</sup>	833.60±10.07 <sup>d</sup>	20.67±0.38 <sup>d</sup>	135.61±0.52 <sup>d</sup>	469.45±2.37 <sup>e</sup>	854.27±10.37 <sup>d</sup>	1459.33±0.42 <sup>e</sup>

Values are expressed as mean  $\pm$  SD (n = 3) of triplicate measurement. Superscripts with different letters are significantly different at  $p < 0.05$  within the same column. S2, soaked 2 hours; S12, soaked 12 hours; S24, soaked 24 hours; G24, germinated at 24 hours; G48, germinated at 48 hours; R5, roasted at 5 minutes; R6, roasted at 6 minutes; R7, roasted at 7 minutes.