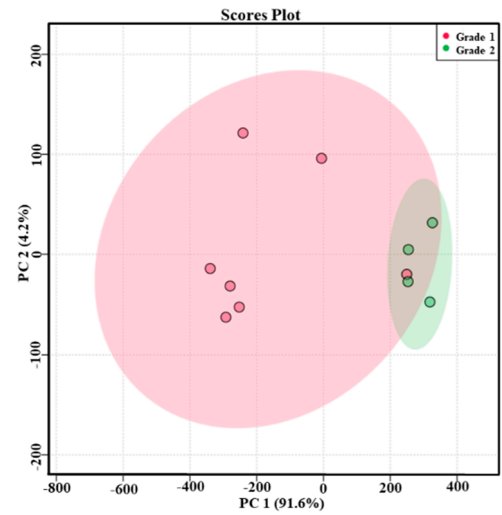
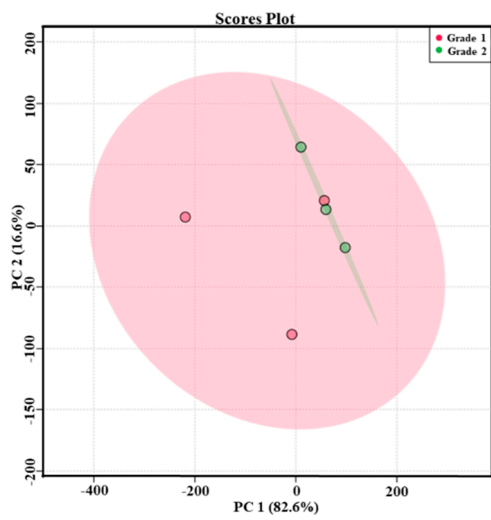


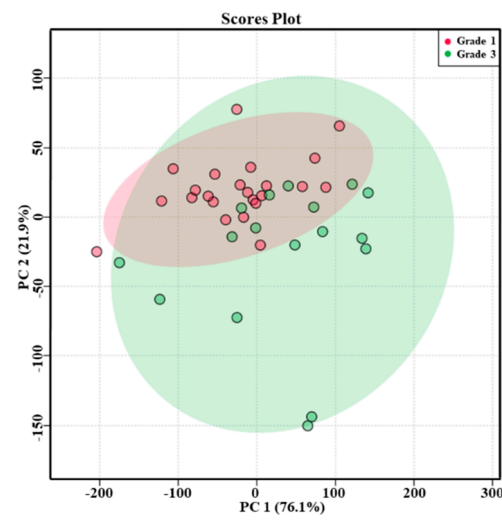
A



B



C



D

**Figure S1.** PCA scores plot of the selected traditional edible oils. A: Different grades of peanut oils; B: Different grades of rice bran oil; C: Different grades of cottonseed oils; D: Different grades of soybean oils.

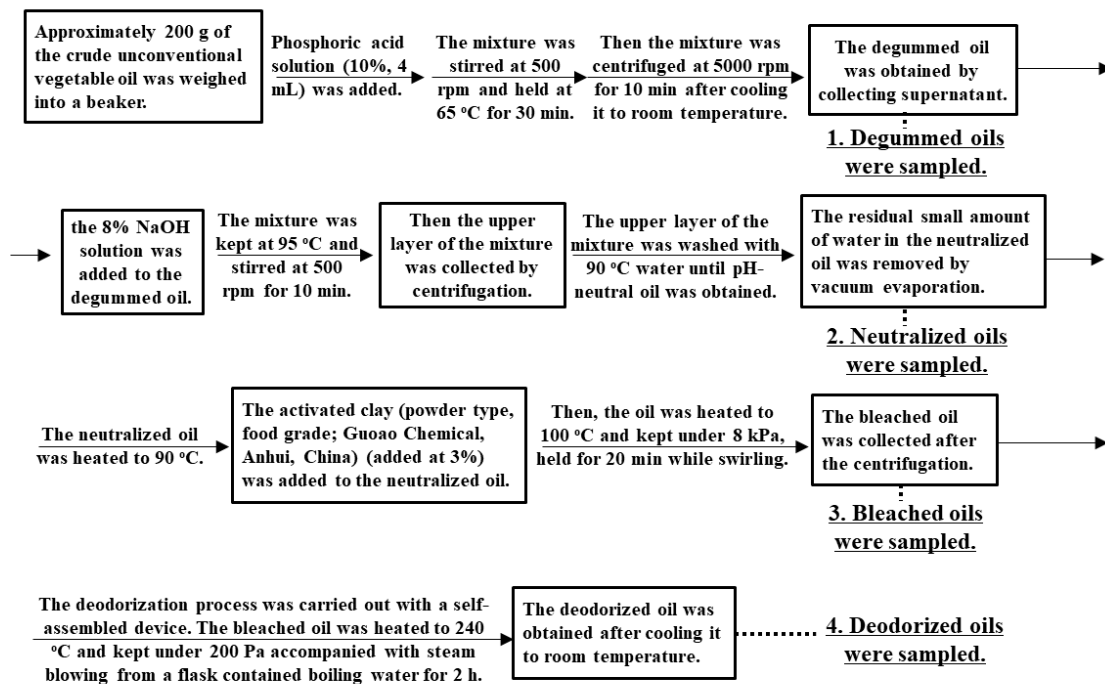


Figure S2. Flowchart depicting the refining process of the crude unconventional vegetable oil.

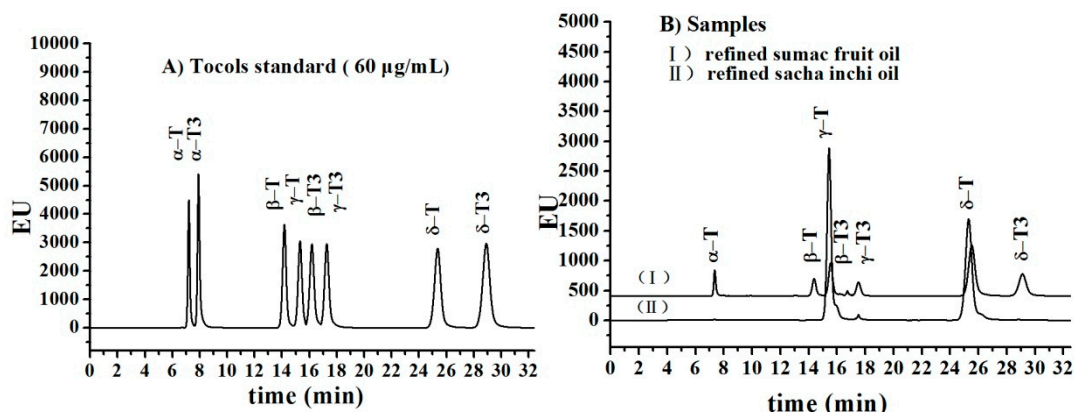


Figure S3. Representative chromatograms of the working standard mixtures, refined sumac fruit oil sample and refined sacha inchi oil sample.

Tocols	Correlation coefficient (R <sup>2</sup> )	Low spiking Level (5 mg/kg)			Medium Spiking Level (100 mg/kg)			High Spiking Level (400 mg/kg)			LOD (mg/kg)	LOQ (mg/kg)
		Average recovery (%)	Intraday precision RSD (%)	Interday precision RSD (%)	Average recovery (%)	Intraday precision RSD (%)	Interday precision RSD (%)	Average recovery (%)	Intraday precision RSD (%)	Interday precision RSD (%)		
$\alpha$ -T	0.9999	95.9	1.1	2.7	99.1	3.5	3.3	98.3	1.6	2.4	0.08	0.28
$\beta$ -T	0.9990	89.3	4.6	4.2	86.9	5.6	5.4	88.3	4.9	3.6	0.12	0.40
$\gamma$ -T	0.9998	85.4	2.6	2.6	95.6	1.4	3.4	93.5	3.2	2.9	0.10	0.36
$\delta$ -T	0.9991	105.2	2.8	4.1	93.2	3.8	3.6	100.2	5.3	3.3	0.10	0.36
$\alpha$ -T3	0.9997	94.4	3.5	3.4	103.5	2.8	5.1	109.7	5.8	3.8	0.14	0.48
$\beta$ -T3	0.9988	88.3	3.2	6.2	89.9	5.6	7.4	84.3	4.4	6.5	0.12	0.40
$\gamma$ -T3	0.9995	90.3	4.4	3.6	86.7	6.6	4.8	93.6	6.7	3.8	0.14	0.46
$\delta$ -T3	0.9990	102.3	3.8	4.8	90.6	6.2	3.8	94.5	5.1	4.2	0.12	0.40

**Table S1.** Correlation coefficient, recovery, intraday precision, interday precision, LOD and LOQ of the tocols analyzed by HPLC.