HCRSP



WDRSP



HYRSP



HYGSP



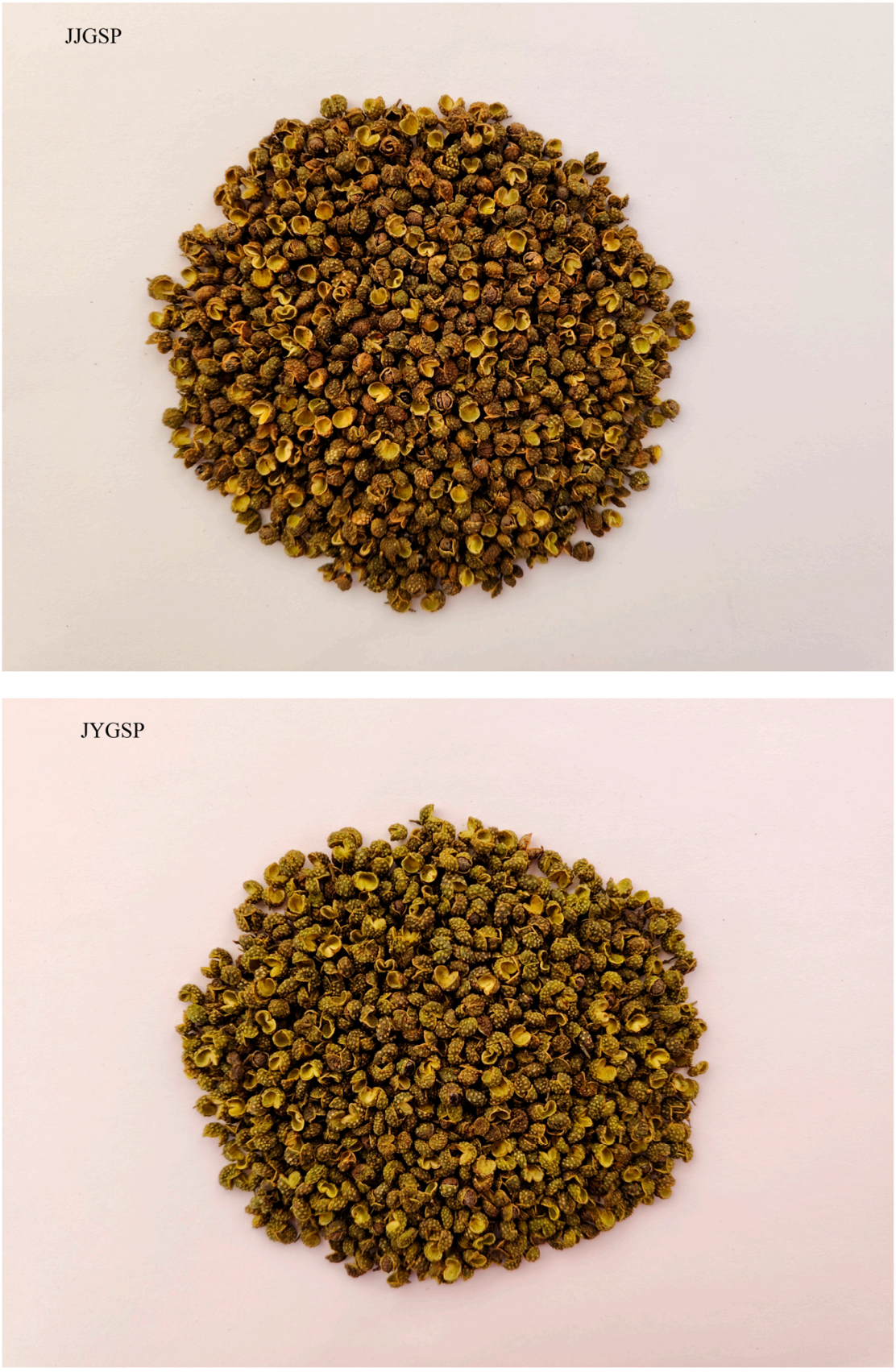

Figure S1. Six cultivars of Sichuan pepper.

Hanyuan green Sichuan pepper (HYGSP), Jiangjin green Sichuan pepper (JJGSP), Jinyang green Sichuan pepper (JYGSP), Hancheng red Sichuan pepper (HCRSP), Wudu red Sichuan pepper (WDRSP), Hanyuan red Sichuan pepper (HYRSP).

Table S1. The main aroma compounds of Sichuan pepper pericarp oil, raw Sichuan pepper, and stir-fried Sichuan pepper tallow.

Compounds	Concentration (μg/g)[a]		
	Sichuan pepper pericarp oil	Raw Sichuan pepper	Stir-fried Sichuan pepper tallow
Terpenes			
(+)-Limonene/D-Limonene	42.53 ± 0.09	2809.1 ± 222.00	81.52 ± 10.95
α-Terpinene	3.24 ± 0.03	25.2 ± 2.00	-
γ-Terpinene	1.60 ± 0.01	71.4 ± 6.00	3.50 ± 0.30
(*E*)-*β*-Ocimene	0.42 ± 0.00	875.80 ± 64.80	-
β-Myrcene	0.43 ± 0.00	1366.80 ± 106.30	-
Allo-ocimene	0.63 ± 0.00	-	-
β-Pinene	0.13 ± 0.00	38.80 ± 3.30	-
β-Caryophyllene	0.44 ± 0.01	116.60 ± 11.10	-
Terpinolene	0.38 ± 0.01	-	-
α-Phellandrene	0.07 ± 0.00	176.50 ± 12.80	-
α-Thujene/(–)-thujone	0.14 ± 0.00	-	-
γ-Muurolene	0.03 ± 0.00	-	-
(E)-Sabinene	-	-	35.71 ± 7.57
Alcohols			
Linalool	12.98 ± 0.11	211.30 ± 14.60	872.80 ± 14.64
α-Terpineol	-	-	3.12 ± 0.27
Eucalyptol	-	-	15.86 ± 3.76
Terpinen-4-ol	0.37 ± 0.00	-	42.21 ± 1.01
Phenylethyl alcohol	0.03 ± 0.00	-	4.24 ± 1.14
(*E*)-4-Thujanol	-	-	13.08 ± 0.63
Geraniol	0.11 ± 0.00	-	-
Esters			
Linalyl acetate	-	531.90 ± 42.20	284.43 ± 9.67
α-Terpinyl acetate	-	-	14.70 ± 0.99
Phenylethyl acetate	-	-	0.56 ± 0.09
Geranyl acetate	0.01 ± 0.00	-	-
Cuminaldehyde	0.01 ± 0.00	-	-
2-Phenethyl acetate	0.03 ± 0.00	-	-
Methyl vanillate	-	-	1.25 ± 0.01
Aldehydes			
(*E*)-Cinnamaldehyde	-	-	5.45 ± 1.26
Decanal	0.02 ± 0.00	-	-
(*E,E*)-2,4-Hexadienal	-	-	0.03 ± 0.00
(*E*)-2-Decenal	-	-	0.35 ± 0.30
(*E,E*)-2,4-Decadienal	-	-	5.45 ± 0.32
Undecanal	0.38 ± 0.00	-	-
Citronellal	91.93 ± 0.06	-	-
others			
D-Carvone	-	-	5.72 ± 0.32
Acetic acid	-	-	13.75 ± 1.15
(E)-Anethol	-	-	20.99 ± 5.70

[a] The "-" indicates that the concentration of the aroma compounds were not detected. The table data is sourced from literature [1,2,3].

Table S2. Volatile compounds in beef tallow Relative Proportions

Compounds	Relative content (%)
Hexanal	18.16
Octanal	19.87
Nonanal	34.11
(*E*)-2-Nonenal	7.89
(*E*)-2-Decenal	5.06
(*E*)-2-Undecenal	5.99
(*E*,*E*)-2,4-Decadienal	2.32
2-Pentylfuran	6.60

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