Table S1. Dynamic change of organic acids during the fermentation of mulberry Jiaosu (g/L).

Time/d	Oxalic acid	Tartaric acid	Pyruvic acid	Malic acid	Lactic acid	Acetic acid	Citric acid	Succinic acid	Total content
0	0.23±0.00^{b}	8.51±0.22^{a}	0±0^{a}	0.07±0.00^{a}	0.46±0.01^{a}	0.77±0.03^{a}	3.56±0.15^{bcd}	0.40±0.00^{a}	14.00±0.40^{a}
5	0.25±0.00^{cd}	9.30±0.54^{bc}	0±0^{a}	0.07±0.00^{a}	1.00±0.18^{a}	1.34±0.03^{b}	3.82±0.06^{def}	0.67±0.08^{b}	16.44±0.74^{b}
10	0.22±0.00^{a}	8.91±0.12^{ab}	0±0^{a}	0.13±0.00^{b}	7.81±0.27^{b}	5.09±0.06^{c}	3.29±0.13^{ab}	1.37±0.08^{c}	26.82±0.24^{c}
15	0.24±0.01^{bc}	9.56±0.31^{cd}	0.11±0.00^{b}	0.26±0.02^{c}	11.10±0.39^{cd}	7.58±0.39^{e}	3.57±0.20^{bcd}	1.59±0.07^{d}	33.99±0.53^{d}
30	0.28±0.01^{f}	11.02±0.27^{g}	0.16±0.00^{de}	0.59±0.02^{h}	13.00±0.74^{f}	9.63±0.32^{g}	3.11±0.20^{a}	2.12±0.12^{ef}	39.91±0.99^{i}
80	0.25±0.01^{d}	10.19±0.39^{ef}	0.15±0.00^{d}	0.39±0.02^{d}	11.1±0.69^{cd}	7.05±0.53^{d}	3.80±0.11^{def}	2.57±0.10^{g}	35.51±1.19^{ef}

Data is presented as means ± standard deviations (n = 3). Different letters within a column are significantly different statistically ($P < 0.05$).

Table S2. Dynamic changes of free amino acids during the fermentation of mulberry Jiaosu (mg/100g).

Times/d	Aspartic acid	Glutamic acid	Serine	Glycine	Histidine	Arginine	Threonine	Alanine	Proline	Tyrosine	Valine	Methionine	Cystine	Isoleucine	Leucine	Phenylalanine*	Lysine	Total amino acids
0	37.80±1.25^{a}	29.47±0.49^{a}	479.71±20.31^{a}	416.02±16.34^{a}	178.19±6.64^{a}	382.03±12.31^{a}	112.36±2.03^{ab}	101.70±3.21^{a}	49.79±2.06^{a}	515.27±32.48^{a}	26.05±1.06^{a}	204.39±6.34^{a}	0.51±0.01^{a}	10.78±0.32^{a}	19.38±0.86^{a}	85.97±9.42^{ab}	184.30±6.07^{a}	2833.75±31.63^{a}
5	39.03±0.85^{a}	31.05±1.23a	379.23±15.16^{b}	198.46±9.32^{b}	145.32±5.24^{b}	407.03±16.27^{a}	109.37±3.95^{a}	115.41±5.62^{b}	44.63±0.98^{b}	284.27±10.98^{b}	35.59±1.62^{b}	174.11±8.93^{b}	1.01±0.01^{ab}	17.68±0.37^{b}	32.03±1.37^{b}	80.77±2.82^{a}	223.32±8.24^{b}	2318.30±7.42^{b}
10	51.49±1.75^{b}	59.59±2.20^{b}	339.03±10.26^{c}	158.39±6.98^{de}	42.22±1.32^{g}	447.63±22.10^{b}	109.97±3.99^{a}	144.77±8.06^{c}	31.29±1.36^{c}	281.88±6.87^{b}	40.53±2.02^{c}	123.79±7.02^{c}	1.51±0.01^{b}	20.29±0.97^{c}	39.76±2.03^{c}	92.63±4.68^{b}	227.48±10.75^{b}	2212.25±12.70^{c}
15	54.71±2.47^{b}	60.70±1.90^{bc}	311.69±9.15^{d}	156.44±4.32^{e}	40.11±0.85^{g}	469.91±19.98^{b}	110.52±5.06^{a}	148.01±5.86^{c}	24.31±1.80^{d}	278.15±16.34^{b}	42.38±1.56^{c}	93.44±3.75^{d}	4.17±0.19^{c}	22.75±1.06^{d}	44.43±2.17^{c}	92.64±5.06^{b}	219.31±11.38^{b}	2173.67±32.70^{c}
30	66.95±5.02^{de}	69.54±3.36^{e}	298.97±11.4^{1ef}	171.15±4.58^{cd}	47.74±1.53^{ef}	531.52±16.32^{c}	120.22±5.97^{bcd}	176.81±5.93^{e}	21.61±0.62^{ef}	235.73±10.26^{b}	55.59±2.34^{de}	65.48±3.21^{f}	10.90±0.13^{e}	32.45±1.65^{e}	69.01±3.43^{e}	121.4±5.84^{cd}	224.36±12.18^{b}	2319.41±37.30^{b}
80	71.47±1.40^{e}	67.30±3.81^{de}	294.33±3.98^{ef}	176.56±2.95^{c}	58.62±2.04^{c}	530.81±25.03^{c}	135.19±7.10^{e}	173.82±5.92^{e}	18.20±1.40^{g}	207.45±11.39^{b}	66.81±2.46^{g}	74.51±1.58^{e}	14.00±0.62^{g}	39.90±1.73^{g}	86.24±4.10^{g}	136.34±3.98^{e}	171.06±5.67^{a}	2322.60±48.72^{b}

Quantitative analysis of free amino acids was carried out according to peak area normalization. The content of free amino acids was expressed as mg/100g dry weight. Data is presented as means ± standard deviations (n = 3). Different letters within a column are significantly different statistically ($P < 0.05$).

Table S3. Dynamic changes of polyphenols during the fermentation of mulberry Jiaosu (mg/L).

Time/d	Gallic acid	Protocatechuic acid	Chlorogenic acid	Vanillic acid	Caffeic acid	Syringic acid	P-coumaric acid	Ferulic acid	Rutin	Total content
0	0±0^{a}	24.48 ±1.18^{a}	35.99 ±1.46^{a}	92.4 ±2.45^{a}	22.11 ±1.16^{a}	117.82 ±1.13^{h}	33.41 ±1.51^{a}	41.07 ±1.53^{a}	140.92 ±8.33^{a}	508.19 ±13.99^{a}
5	11.54 ±0.01^{b}	55.6 ±1.91^{b}	65.61 ±4.51^{b}	182.12 ±8.27^{b}	32.91 ±0.56^{b}	165.59 ±3.85^{i}	30.65 ±0.14^{b}	46.76 ±0.79^{b}	331.18 ±2.33^{b}	921.97 ±20.17^{b}
10	12.24 ±0.01^{c}	140.5 ±4.49^{c}	208.93 ±8.15^{c}	534.25 ±19.47^{c}	41.61 ±1.23^{c}	109.49 ±1.13^{g}	27.62 ±0.84^{c}	50.15 ±1.9^{bc}	407.68 ±12.54^{c}	1532.45 ±39.73^{c}
15	13.17 ±0.17^{d}	167.85 ±9.08^{de}	260.89 ±5.18^{ef}	607.33 ±8.13^{fg}	43.13 ±1.14^{cd}	87.46 ±2.32^{f}	31.29 ±1.2^{b}	51.59 ±1.3^{c}	432.61 ±9.14^{cde}	1695.33 ±21.49^{e}
30	14.14 ±0.15^{g}	194.26 ±10.97^{gh}	268.09 ±12.33^{ef}	619.9 ±13.93^{g}	49.7 ±1.65^{ef}	69.91 ±2.1^{d}	28.26 ±1.7^{c}	57.29 ±1.94^{e}	438.17 ±19.28^{de}	1734.73 ±13.2^{e}
80	13.48 ±0.33^{e}	202.23 ±6.87^{h}	238.99 ±11^{d}	566.06 ±8.12^{d}	49.25 ±2.31^{f}	44.65 ±1.87^{a}	28.43 ±1.36^{c}	52.1 ±2.31^{c}	423.15 ±10.51^{cd}	1620.32 ±37.38^{d}

Data is presented as means ± standard deviations (n = 3). Different letters within a column are significantly different statistically ($P < 0.05$).

Table S4. Microbial community diversity during the fermentation of Mulberry Jiaosu.

Samples (Days）	Shannon		Simpson		Ace		Chao1		OTUs	
	Fungi	Bacteria	Fungi	Bacteria	Fungi	Bacteria	Fungi	Bacteria	Fungi	Bacteria
P0d	1.50±0.30c	0.46±0.13b	0.38±0.05a	0.78±0.10bc	163.00±43.43b	75.00±58.28ab	151.00±86.38b	47.67±23.35a	172±16b	29±10a
P5d	0.98±0.11b	0.70±0.17c	0.49±0.06a	0.68±0.16ab	102.00±30.35ab	58.00±18.73ab	82.67±9.07ab	36.00±8.19a	54±5a	25±4a
P10	0.26±0.06a	0.28±0.05ab	0.91±0.02b	0.88±0.03c	58.33±34.67a	26.33±16.20a	48.67±26.50a	22.33±7.09a	23±5a	16±2a
P15	0.94±0.14b	0.20±0.04a	0.55±0.05a	0.91±0.02c	90.67±20.60ab	26.67±6.66a	76.00±11.53ab	20.00±2.00a	47±6a	16±1a
P30	1.17±0.13bc	0.38±0.08ab	0.45±0.07a	0.86±0.02c	58.00±9.17a	107.33±28.68b	57.00±8.89a	106.33±31.09b	55±8a	95±28b
P80	0.30±0.39a	1.08±0.05d	0.87±0.19b	0.57±0.06a	35.67±23.46a	231.33±8.50c	28.00±11.00a	225.00±11.53c	21±5a	209±12c

Data are presented as means ± standard deviations (n = 3). Values with different letters within a column are significantly different statistically ($P < 0.05$).

OTUs, operational taxonomic units.

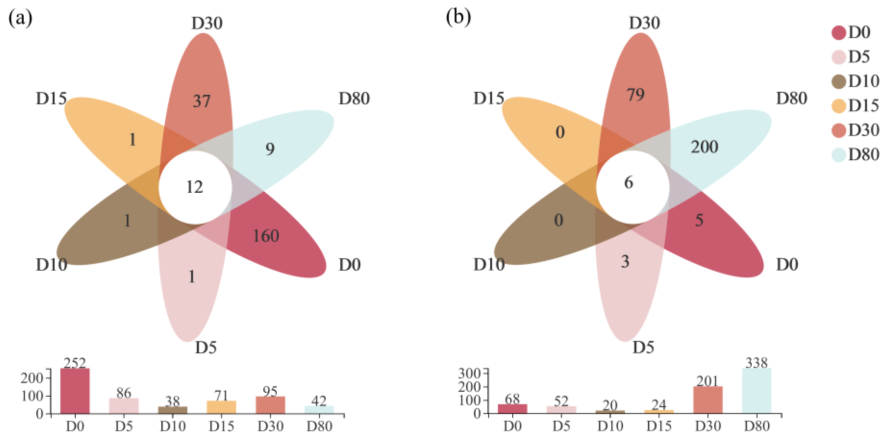

Figure S1. OTUs Venn plot of fungi (a) and bacteria (b).

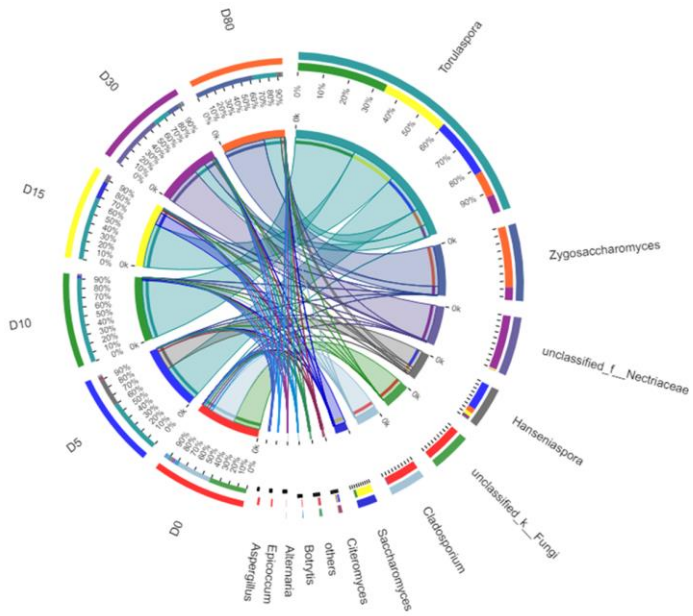

Figure S2. The distribution of the fungi at the gene level in mulberry Jiaosu.

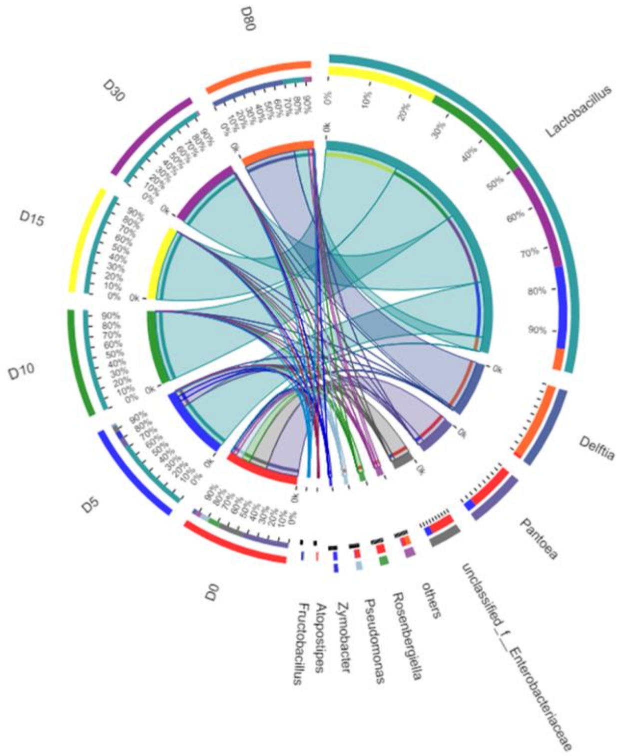

Figure S3. The distribution of the bacteria at the gene level in mulberry Jiaosu.

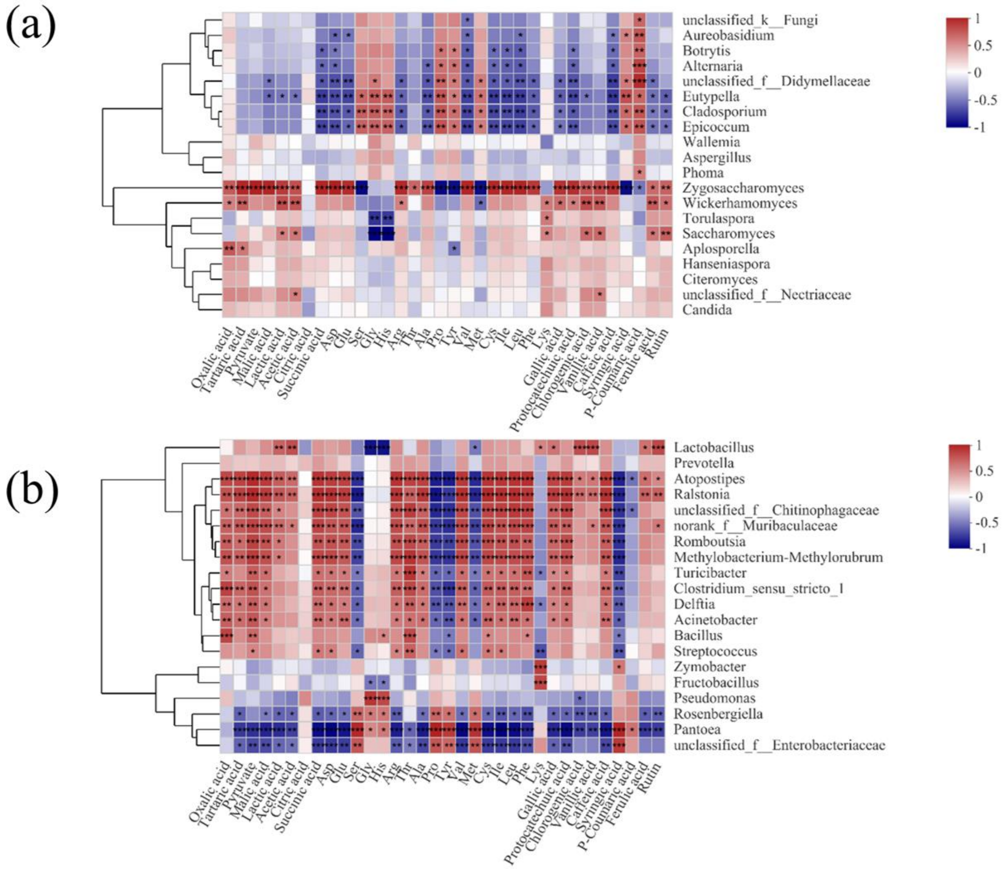

Figure S4. Correlation analysis between dominant fungal (a) and bacterial (b) genera with bioactive compounds. Red represents a positive correlation and blue represents a negative correlation. The darker the color, the greater the correlation.