**Table S1** Fermentation characteristics of Chinese cabbage waste fermented alone or with wheat bran/rice bran.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Treatments | Items | Groups | Days | | | | | | | Mean | SEM | Significance | | |
| 1 | 3 | 5 | 7 | 15 | 30 | 60 | T | D | T×D |
| Wheat bran | Effluent (mL) | Con | 274.67±11.37Aa | 306.00±8.00ABa | 290.67±16.17ABa | 319.33±16.17Ba | 354.67±12.86Ca | 377.33±3.06Ca | 374.67±3.06Ca | 328.19a | 15.75 | \* | \* | \* |
| W1 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| W2 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| W3 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| Mean | 68.67A | 76.50BC | 72.67AB | 79.83C | 88.67D | 94.3D | 93.67D |  |
| pH | Con | 4.68±0.02Aa | 4.17±0.01Ba | 3.95±0.02Ca | 3.96±0.04Ca | 3.96±0.01Ca | 3.91±0.01Ca | 3.79±0.02Da | 4.06a | 0.03 | \* | \* | \* |
| W1 | 4.64±0.06Aa | 4.19±0.02Ba | 4.05±0.01CDab | 4.08±0.01Cb | 3.96±0.01Da | 3.98±0.01Db | 3.97±0.05Db | 4.12b |
| W2 | 4.87±0.06Ab | 4.22±0.02Bab | 4.11±0.01Cb | 4.08±0.02Cb | 3.91±0.01Db | 3.93±0.02Da | 4.01±0.01Eb | 4.16c |
| W3 | 4.98±0.06Ac | 4.71±0.02Bb | 4.23±0.08Cc | 4.21±0.02Cc | 4.06±0.03Dc | 4.00±0.01Db | 4.03±0.01Db | 4.33d |
| Mean | 4.81A | 4.32B | 4.09C | 4.08C | 3.97D | 3.96D | 3.95D |  |
| Lactic acid (g/kg DM) | Con | 212.91±17.58Aa | 266.71±3.62Ba | 315.76±14.78CDa | 318.23±4.52CDa | 308.82±12.29Ca | 328.65±24.16CDa | 349.84±14.17Da | 300.13a | 9.71 | \* | \* | \* |
| W1 | 55.87±18.21Ab | 138.80±20.09Bb | 129.56±31.55Bb | 120.46±13.97Bb | 200.09±14.12Cb | 137.76±11.86Bb | 158.89±6.30BCb | 134.49b |
| W2 | 50.96±1.11Ab | 96.48±4.08Bc | 123.91±11.90BCb | 146.13±9.67Cc | 146.61±25.96Cc | 134.04±28.67BCb | 146.55±6.29Cb | 120.67c |
| W3 | 42.31±2.29Ab | 63.60±2.57ABd | 91.40±35.09BCb | 119.23±5.05CDb | 136.54±20.59Dc | 139.01±9.33Db | 153.32±3.00Db | 106.49d |
| Mean | 90.51A | 141.40B | 165.16C | 176.01C | 198.02D | 184.87CD | 202.15D |  |
| Acetic acid (g/kg DM) | Con | 6.94±1.42Aa | 10.96±2.12Aa | 13.16±2.19Ba | 12.51±1.68Ba | 13.07±2.29Ba | 11.24±0.37ABa | 12.51±0.84Ba | 11.49a | 0.42 | \* | \* | \* |
| W1 | 3.04±1.26Ab | 7.03±1.47Bab | 7.97±2.17Bb | 6.54±1.75ABb | 12.49±0.33Cab | 12.72±0.96Ca | 16.45±1.29Cb | 9.46b |
| W2 | 3.84±0.66Aab | 7.46±0.28Bab | 8.84±1.00BCb | 9.75±0.06CEab | 9.87±0.44CEbc | 12.44±0.51Da | 10.92±0.97DEa | 9.02b |
| W3 | 3.87±0.37Aab | 5.97±0.37ABb | 6.78±0.97BCb | 8.81±0.38Cb | 7.65±0.33Cc | 17.43±1.86Db | 15.71±0.70Db | 9.46b |
| Mean | 4.42A | 7.85B | 9.19BC | 9.40CD | 10.77D | 13.46E | 13.90E |  |
| Propionic acid (g/kg DM) | Con | ND | ND | ND | ND | ND | ND | ND | ND | 0.07 | NS | \* | \* |
| W1 | 2.45±0.25a | 1.60±0.17a | 2.25±0.06a | 2.10±0.37a | 1.98±0.80 | 2.53±1.01 | 2.06±0.25 | 2.14 |
| W2 | 2.38±0.19a | 2.51±0.37bc | 2.87±0.07b | 2.11±0.12a | 1.78±1.09 | 1.94±0.25 | 2.61±0.08 | 2.32 |
| W3 | 1.35±0.28Ab | 1.99±0.32ABac | 2.23±0.41Ba | 1.37±0.18Ab | 2.29±0.29B | 3.37±0.04C | 2.64±0.33CB | 2.18 |
| Mean | 2.06AB | 2.03AB | 2.45AB | 1.86A | 2.02AB | 2.62B | 2.44AB |  |
| WSC (g/kg DM) | Con | 82.69±0.71Aa | 31.27±0.31Ba | 22.67±1.00Ca | 14.27±0.10Da | 13.63±1.20Da | 13.95±0.16Da | 14.83±1.83Da | 27.62a | 1.81 | \* | \* | \* |
| W1 | 67.66±2.41Ab | 54.83±3.98Bb | 49.61±3.15BCb | 43.76±0.30Cb | 32.38±1.71Db | 31.94±0.49Db | 31.96±0.39Db | 44.59b |
| W2 | 55.17±1.70Ac | 45.62±1.60Bc | 42.01±1.75Bc | 41.47±2.59Bb | 30.67±1.45Cb | 28.15±1.01Cc | 28.76±0.95Cc | 38.84c |
| W3 | 63.12±4.01Ab | 55.92±3.20Bb | 42.73±0.84Cc | 43.34±0.76Cb | 40.65±1.91Cc | 40.64±1.89Cd | 40.78±0.75Cd | 46.74d |
| Mean | 67.16A | 46.91B | 39.26C | 35.71D | 29.33E | 28.67E | 29.08E |  |
| Rice bran | Effluent (mL) | Con | 274.67±11.37Aa | 306.00±8.00ABa | 290.67±16.17ABa | 319.33±16.17Ba | 354.67±12.86Ca | 377.33±3.06Ca | 374.67±3.06Ca | 328.19a | 15.75 | \* | \* | \* |
| R1 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| R2 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| R3 | 0b | 0b | 0b | 0b | 0b | 0b | 0b | 0b |
| Mean | 68.67A | 76.50BC | 72.67AB | 79.83C | 88.67D | 94.3D | 93.67D |  |
| pH | Con | 4.68±0.02Aa | 4.17±0.01Ba | 3.95±0.02Ca | 3.96±0.04Ca | 3.96±0.01Ca | 3.91±0.01Ca | 3.79±0.02Da | 4.06a | 0.03 | \* | \* | \* |
| R1 | 4.95±0.03Ab | 4.26±0.01Bb | 4.10±0.01Cb | 4.09±0.02Cb | 4.06±0.01Cb | 4.08±0.03Cb | 4.09±0.02Cb | 4.23b |
| R2 | 4.89±0.05Ab | 4.35±0.05Bc | 4.24±0.03Cc | 4.10±0.01Db | 4.12±0.03Dc | 4.14±0.02Db | 4.15±0.04CDbc | 4.28c |
| R3 | 4.97±0.10Ab | 4.54±0.04Bd | 4.32±0.02CEd | 4.22±0.05CDc | 4.15±0.03Dc | 4.14±0.02Db | 4.22±0.02DEc | 4.34d |
| Mean | 4.87A | 4.33B | 4.16C | 4.09D | 4.07D | 4.07D | 4.06D |  |
| Lactic acid (g/kg DM) | Con | 212.91±17.58Aa | 266.71±3.62Ba | 315.76±14.78CDa | 318.23±4.52CDa | 308.82±12.29Ca | 328.65±24.16CDa | 349.84±14.17Da | 300.13a | 11.23 | \* | \* | \* |
| R1 | 38.90±5.26Ab | 84.36±10.15BCb | 81.45±11.77BCb | 78.129±2.69BCb | 70.03±9.30Bb | 91.25±4.99Cb | 87.17±2.25BCb | 75.90b |
| R2 | 47.38±1.66Ab | 63.86±15.82ABbc | 79.16±1.67BCb | 65.52±11.10ABb | 76.18±6.66BCb | 101.78±12.55Cb | 95.48±3.94Cb | 75.62b |
| R3 | 35.16±12.45Ab | 51.89±12.63ABb | 69.90±2.89BCb | 70.60±4.05BCb | 71.16±12.57BCb | 81.67±7.52Cb | 79.58±1.67Cb | 65.71c |
| Mean | 83.59A | 116.71B | 136.57C | 133.12C | 131.54C | 150.84D | 153.02D |  |
| Acetic acid (g/kg DM) | Con | 6.94±1.42Aa | 10.96±2.12Aa | 13.16±2.19Ba | 12.51±1.68Ba | 13.07±2.29Ba | 11.24±0.37AB | 12.51±0.84Ba | 11.49a | 0.40 | \* | \* | \* |
| R1 | 3.36±1.41Ab | 4.75±1.93Ab | 5.13±0.72Ab | 5.46±0.45Ab | 6.88±0.72Ab | 13.12±1.21B | 11.18±1.93Bab | 7.13b |
| R2 | 3.38±0.87Ab | 4.50±1.59Ab | 6.13±0.83ABb | 5.66±0.33ABb | 7.91±0.73BCb | 9.88±1.70C | 8.15±0.44BCb | 6.52b |
| R3 | 3.10±1.88Ab | 4.25±1.28ABb | 6.36±1.22ABb | 5.15±1.86ABb | 8.02±1.05BCb | 10.34±1.41CD | 13.43±0.76Da | 7.24b |
| Mean | 4.20A | 6.11B | 7.69BC | 7.20B | 8.97C | 11.14D | 11.32D |  |
| WSC (g/kg DM) | Con | 82.69±0.71Aa | 31.27±0.31Ba | 22.67±1.00Ca | 14.27±0.10Da | 13.63±1.20Da | 13.95±0.16Da | 14.83±1.83Da | 27.62a | 1.55 | \* | \* | \* |
| R1 | 14.48±0.57Ab | 11.84±1.05Bb | 10.18±0.66Cb | 10.47±0.45BCbc | 8.25±0.10Dbc | 8.57±0.36Dbc | 7.37±0.19Db | 10.16b |
| R2 | 14.75±1.12Ab | 14.49±0.44Ab | 10.83±0.12Bb | 11.08±0.56Bb | 11.40±0.68Bb | 10.24±0.48Bb | 7.45±0.80Cb | 11.46c |
| R3 | 18.153±1.33Ab | 13.71±0.21Bb | 9.19±0.83Cb | 7.54±0.53CDc | 6.40±0.57DEc | 6.92±0.53Dc | 4.54±0.44Ec | 9.49d |
| Mean | 32.52A | 17.83B | 13.22C | 10.84D | 9.92D | 9.92D | 8.55E |  |

The significant difference (*p*<0.05) between different days (row) in the same group is represented by the different capital letters; The significant difference (*p*<0.05) between different groups (column) on the same day is represented by the different lowercase letters; The control group (Con). Chinese cabbage waste was mixed with wheat bran at a mass ratio of 383:117 (W1), 353:147 (W2), and 323:177 (W3) or with rice bran at 387:113 (R1), 358:142 (R2), and 329:171 (R3), respectively; WSC, water-soluble carbohydrate; DM, dry matter; FW, fresh weight; ND means not detected; T, the wheat bran/rice bran treatment; D, time duration; T×D, the interaction between the bran treatment and time duration; \*, *p*<0.05; NS, *p*>0.05; SEM, standard error of means.