**SURPPORTING INFORMATION**

**Comparison of raspberry ketone production by submerged fermentation in different bioreactors**

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**Captions in Supporting Information**

Supplementary Tables:

**Table S1.** Phenylalanine concentration during fungal fermentation in different reactors.

**Table S2.** Glucose consumption versus fermentation time in different reactors.

Supplementary Figures:

**Figure S1.** Formation mechanism of raspberry ketone and alcohol with the precursor. of phenylalanine in fungal fermentation (Zorn et al., 2003).

**Figure S2.** Fluidization regimes showing the change of pellet fluidization during 4-week of fermentation, with the gas flowrate of 0.15 v.v.m.

**Table S1** Phenylalanine concentration during fungal fermentation in different reactors.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (week) | Phenylalanine concentration (mg/L) | | | |
| Flask | STR | PBR | FBR |
| 0 | 1735.1±27.8 | 1593.8±99.4 | 1755.2±6.3 | 1092.4±3.8 |
| 0.5 | 1495.9±4.7 | 1569.7±77.8 | 1426.7±15.2 | 957.1±21.0 |
| 1 | 1297.4±6.0 | 1507.3±57.5 | 1249.0±4.5 | 893.8±10.6 |
| 1.5 | 1185.3±24.7 | 1268.3±74.9 | 1086.5±10.1 | 845.6±35.8 |
| 2 | 1097.4±44.9 | 1112.4±76.6 | 1059.5±24.9 | 759.7±9.2 |
| 2.5 | 1009.7±52.5 | 1098.7±49.5 | 1015.5±13.2 | 685.9±11.7 |
| 3 | 1021.6±39.4 | 984.4±86.3 | 946.7±10.4 | 629.5±19.5 |
| 3.5 | 1008.0±25.1 | 997.3±42.6 | 917.8±8.0 | 561.7±12.7 |
| 4 | 924.3±102.5 | 973.5±61.3 | 816.0±10.9 | 509.5±17.0 |

**Table S2** Glucose consumption versus fermentation time in different reactors.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (week) | Glucose concentration (g/L) | | | |
| Flask | STR | PBR | FBR |
| 0 | 72.5±0.1 | 74.0±1.8 | 68.6±0.6 | 68.5±0.3 |
| 0.5 | 70.9±0.5 | 73.4±0.6 | 67.0±0.9 | 65.3±0.3 |
| 1 | 69.5±1.6 | 73.1±0.4 | 64.5±0.7 | 61.8±0.3 |
| 1.5 | 66.7±1.1 | 72.3±0.4 | 63.5±0.3 | 57.7±0.6 |
| 2 | 66.7±2.0 | 70.2±0.4 | 60.7±0.8 | 56.4±0.4 |
| 2.5 | 67.1±2.5 | 64.7±0.8 | 59.6±0.5 | 52.6±0.2 |
| 3 | 66.7±1.3 | 63.1±0.6 | 55.1±0.6 | 51.4±0.3 |
| 3.5 | 63.7±0.9 | 61.8±0.4 | 51.7±0.4 | 51.6±0.4 |
| 4 | 60.3±2.9 | 61.3±0.6 | 48.3±0.1 | 50.8±0.3 |

图示, 示意图

描述已自动生成**Figure S1.** Formation mechanism of raspberry ketone and alcohol with the precursor of phenylalanine in fungal fermentation (Zorn et al., 2003).

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Description automatically generated

**Figure S2.** Fluidization regimes showing the change of pellet fluidization during 4-week of fermentation, with the gas flowrate of 0.15 v.v.m.

# **Reference**

Zorn, H., Fischer-Zorn, M., Berger, R.G. 2003. A labeling study to elucidate the biosynthesis of 4-(4-hydroxyphenyl)-butan-2-one (raspberry ketone) by Nidula niveo-tomentosa. *Appl Environ Microbiol*, **69**(1), 367-372.

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