Table S1: Molecular identification of LAB isolates based on the 16S rRNA and *phes* gene sequencing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Strain** | **NCBI accession number** | **16S rRNA** | ***phes* Gene** | **Source** |
| D12 | MG996515.1 | *Lactobacillus amylolyticus* | *Lactobacillus amylolyticus* | Ting Slurry |
| D7 | MG996514.1 | *Lactobacillus helveticus* | *Lactobacillus helveticus* | Ting Slurry |
| T12 | MN068415.1 | *Lactiplantibacillus plantarum* | *Lactiplantibacillus plantarum* | Ting Slurry |
| K20 | MG996453.1 | *Lacticaseibacillus paracasei* | *Lacticaseibacillus paracasei* | Ting Slurry |

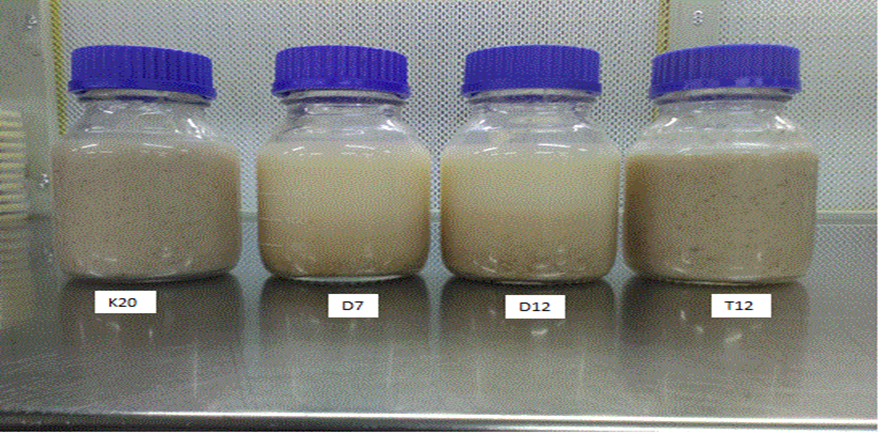


Figure S1: Fermentation products showing the effect of amylase positive strains D7 and D12 on sorghum gruel.

Table S2: Amylase assay of the 4 probiotic strains.

|  |  |
| --- | --- |
| **LAB strains** | **Amylase** |
| K20 | Absent |
| T12 | Absent |
| D12 | Present |
| D7 | Present |
|  |  |

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Figure S2: Agarose gel electrophoresis showing positive results for PCR amplification of amylase gene in strains D7 and D12.

Table S3: Colony counts of LAB strains used for fermentation over period of 24hours supplemented with 10% glucose.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strains | Log cfu/mL |  |  |  |  |
| **0 hour** | **4 hours** | **8 hours** | **16 hours** | **24 hours** |
|  |  |  |  |  |  |
| *Lacticaseibacillus paracasei* K20 | 7,98(±0.04)cd | 8,3(±0.03)de | 8,195(±0.06)de | 8,83(±0.09)d | 8,585(±0.06)cd |
| *Lactiplantibacillus plantarum* T12 | 8,285(±0.01)e | 8,38(±0.05)e | 7,505(±0.05)a | 8,805(±0.10)d | 8,8(±0.08)d |
| *Lactobacillus amylolyticus* D12 | 7,285(±0.15)b | 7,39(±0.05)a | 7,6(±0.05)ab | 7,885(±0.02)abc | 7,815(±0.02)a |
| *Lactobacillus helveticus* D7 | 7,93(±0.04)cd | 8,09(±0.01)c | 8,01(±0.01)cd | 8,4(±0.01)bcd | 8,285(±0.02)bc |

Log mean values with different letters in each column are significantly different at p<0.05

Values reported are means of at least three independent measurements.

Table S4: Mean log colony counts of LAB strains used for fermentation over period of 24hours without added glucose.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strains | log10 cfu/mL |  |  |  |  |
| **0 hour** | **4 hours** | **8 hours** | **16 hours** | **24 hours** |
|  |  |  |  |  |  |
| *Lacticaseibacillus paracasei* K20 | 7,74 (±0.048)cd | 8,18 (±0.057)e | 8,535 (±0.028)ef | 8,39 (±0)ef | 8,29 (±0.097)cd |
| *Lactiplantibacillus plantarum* T12 | 8,375 (±0.012)e | 8,445 (±0.053)f | 8,66 (±0.032)d | 8,58 (±0.04)d | 8,24 (±0.138)f |
| *Lactobacillus amylolyticus* D12 | 7,09 (±0.016)b | 7,52 (±0.024)b | 7,495 (±0.085)d | 8,03 (±0.024)d | 8,49 (±0.065)b |
| *Lactobacillus helveticus* D7 | 7,32 (±0.073)bc | 7,535 (±0.028)c | 7,22 (±0.04)b | 7,76 (±0.008)c | 8,59 (±0.024)ef |

Log mean values with different letters in each column are significantly different at p<0.05

Values reported are means of at least three independent measurements.

**Table S5:**  Lactic acid composition data for fermented sorghum gruels. Percentage lactic acid levels were monitored hourly throughout the fermentation processes. The results were recorded as mean values.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample |  | F1- without %10 glucose | | |  | F2- 10% glucose | | |
|  | **0 hour** | **24 hours** | **Percentage difference%** |  | **0 hour** | **24 hours** | **Percentage difference %** |
| *Lacticaseibacillus paracasei* K20 |  | 0,14 (±0.07) | 0,18 (±0.02) | 0,04 |  | 0,25 (±0.07) | 0,44 (±0.25) | 0,19 |
| *Lactiplantibacillus plantarum* T12 |  | 0,16 (±0.03) | 0,24 (±0.11) | 0,08 |  | 0,24 (±0.03) | 0,67 (±0.11) | 0,43 |
| *Lactobacillus amylolyticus* D12 |  | 0,19 (±0.03) | 0,48 (±0.21) | 0,29 |  | 0,23 (±0.03) | 0,55 (±0.21) | 0,32 |
| *Lactobacillus helveticus* D7 |  | 0,15 (±0.1) | 0,42 (±0.14) | 0,27 |  | 0,24 (±0.06) | 0,68 (±0.14) | 0,44 |

± SD of lactic acid value of LAB strains for each column

Values reported are means of at least three independent measurements.