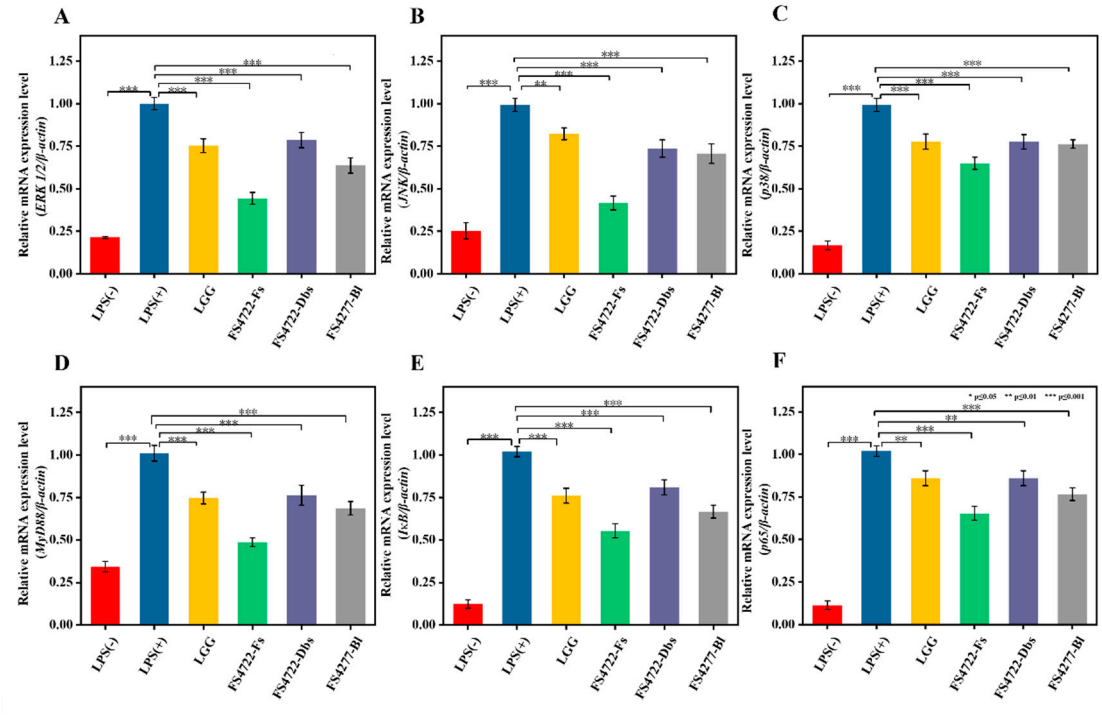



**Figure S1**: Effects of the MAPK and MyD88/NF-κB pathway in LPS-stimulated RAW 264.7 cells treated with FS4722-Fs, FS4722-Dbs, and FS4722-Bl. Relative mRNA levels of (A) ERK 1/2, (B) JNK, (C) p38, (D) MyD88, (E) IκB, and (F) p65. Data are presented as mean ± SD (n=3). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ versus LPS (+) group by one-way ANOVA with Dunnett's post hoc test.

**Table S1**

Primers sequences for real-time reverse transcription-polymerase chain reaction (RT-PCR).

| Primera | | Primer sequence (5'–3') |
|---|---|---|
| iNOS | Forward | CCCTTCCGAAGTTTCTGGCAGCAGC |
| | Reverse | GGCTGTCAGAGCCTCGTGGCTTTGG |
| COX-2 | Forward | CACTACATCCTGACCCACTT |
| | Reverse | ATGCTCCTGCTTGAGTATGT |
| IL-1β | Forward | CAGGATGAGGACATGAGCACC |
| | Reverse | CTCTGCAGACTCAAACTCCAC |
| IL-6 | Forward | GTACTCCAGAAGACCAGAGG |
| | Reverse | TGCTGGTGACAACCACGGCC |
| TNF-α | Forward | TTGACCTCAGCGCTGAGTTG |
| | Reverse | CCTGTAGCCCACGTCGTAGC |
| IL-10 | Forward | GACTTTAAGGGTTACCTGGGTTG |

| | | |
|---|---|---|
| β-actin | Reverse | TCACATGCGCCTTGATGTCT |
| | Forward | GTGGGCCGCCCTAGGCACCAG |
| | Reverse | GGAGGAAGAGGATGCGGCAGT |

**Table S2**

Primers sequences for real-time reverse transcription-polymerase chain reaction (RT-PCR).

| Primera | | Primer sequence (5'–3') |
|---|---|---|
| ERK 1/2 | Forward | CCAGGATTACCTGCCTCAAG |
| | Reverse | TCTGTAGCCACCACCAATCC |
| JNK | Forward | GAG AAG GAC TCC CAG CAT GA |
| | Reverse | GTC AGG GTA GGC AAG GAG TC |
| P38 | Forward | TTC CGA TGG AAC TGT GAC CC |
| | Reverse | GTT GCT GGC AAT GAG CGA TA |
| MyD88 | Forward | GGA ACT GCA GAC CTG GAA GG |
| | Reverse | GCT GGT GGA GTT CAA GTC GG |
| IκB-α | Forward | AGG CCA GGA GAC CAG GAA T |
| | Reverse | TCC TTG AGC TCA GGA ATC CG |
| P 65 | Forward | AGC ACC AGC TGG TCA GGT AT |
| | Reverse | TCT GGC TGG ACT CCA TGA TC |
| β-actin | Forward | GTGGGCCGCCCTAGGCACCAG |
| | Reverse | GGAGGAAGAGGATGCGGCAGT |

**Table S3.** Response Surface Test Factor Levels.

| Factors | Levels | | |
|---|---|---|---|
| | -1 | 0 | 1 |
| A: Dosage of Skim Milk Powder (%) | 2.50 | 5.00 | 7.50 |
| B: Dosage of Trehalose (%) | 5.00 | 10.00 | 15.00 |
| C: Dosage of Carboxymethyl Cellulose (%) | 0.50 | 1.00 | 1.50 |

**Table S4.** RSE Optimization for the Survival of *L. plantarum* FS4722

| Experiment Number | A: Dosage of Skim Milk Powder (%) | B: Dosage of Trehalose (%) | C: Dosage of Carboxymethyl Cellulose (%) | Survival Rate (%) |
|---|---|---|---|---|
| 1 | 7.50 | 10.00 | 1.50 | 69.12±4.19 |
| 2 | 5.00 | 5.00 | 0.50 | 68.24±5.19 |
| 3 | 2.50 | 5.00 | 1.00 | 70.89±3.19 |
| 4 | 7.50 | 10.00 | 0.50 | 72.78±4.18 |
| 5 | 2.50 | 10.00 | 1.50 | 76.67±6.18 |
| 6 | 5.00 | 10.00 | 1.00 | 79.99±6.18 |
| 7 | 7.50 | 5.00 | 1.00 | 71.32±5.18 |
| 8 | 5.00 | 10.00 | 1.00 | 84.19±6.19 |
| 9 | 5.00 | 10.00 | 1.00 | 82.18±7.18 |
| 10 | 5.00 | 15.00 | 1.50 | 76.56±4.18 |

| | | | | |
|---|---|---|---|---|
| 11 | 7.50 | 15.00 | 1.00 | 65.44±5.18 |
| 12 | 5.00 | 5.00 | 1.50 | 64.87±4.18 |
| 13 | 2.50 | 10.00 | 0.50 | 78.13±4.18 |
| 14 | 2.50 | 15.00 | 1.00 | 61.56±5.23 |
| 15 | 5.00 | 10.00 | 1.00 | 85.87±6.17 |
| 16 | 5.00 | 15.00 | 0.50 | 67.45±5.34 |
| 17 | 5.00 | 10.00 | 1.00 | 86.92±6.78 |

Data are presented as mean ± standard deviation of triplicate experiments.

**Table S5.** ANOVA for the survival rate of *L. plantarum* FS4722

| Source of Variance | Sum of Squares | Degrees of Freedom | Mean Square | F-value | p-value | Significance |
|---|---|---|---|---|---|---|
| Model | 797.23 | 9 | 88.58 | 3.68 | 0.0497 | significant |
| A | 8.00 | 1 | 8.00 | 0.33 | 0.5821 | |
| B | 2.00 | 1 | 2.00 | 0.083 | 0.7814 | |
| C | 0.000 | 1 | 0.000 | 0.000 | 1.0000 | |
| AB | 2.25 | 1 | 2.25 | 0.094 | 0.7686 | |
| AC | 0.25 | 1 | 0.25 | 0.010 | 0.9216 | |
| BC | 42.25 | 1 | 42.25 | 1.76 | 0.2266 | |
| $A^2$ | 138.00 | 1 | 138.00 | 5.74 | 0.0478 | |
| $B^2$ | 484.32 | 1 | 484.32 | 20.14 | 0.0028 | |
| $C^2$ | 58.42 | 1 | 58.42 | 2.43 | 0.1630 | |
| Residual | 168.30 | 7 | 24.04 | | | |
| Lack of Fit | 137.50 | 3 | 45.83 | 5.95 | 0.0588 | not significant |

| | | | |
|---|---|---|---|
| Pure Error | 30.80 | 4 | 7.70 |
| Cor Total | 965.53 | 16 | |