**Table S1. Strains, plasmids, mutants, primers, and antibiotics used in this study.**

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| --- | --- | --- |
| **Strains** | **Description** | **Source** |
| *Lactobacillus**\_plantarum* |  | Lab stock |
| *E. coli GB2005* | (HS996, ∆recET, ∆ybcC). The endogenous recET locus and the DLP12 prophage ybcC, which encodes a putative exonuclease similar to the Redα, were deleted | Lab stock |
| *E. coli GB05-dir* | (GB2005, araC-BAD-ETgA) recE, recT, redγ and recA under BAD promoter was inserted at the ybcC locus | Lab stock |
| *Nissle1917/p15A-cm-Pgenta* | The Pgenta promoter gene was heterologous expressed in E. coli Nissle1917 | This study |
| *Nissle1917/p15A-cm-iunH* | The iunH gene was heterologous expressed in E. coli Nissle1917 | This study |
| **Plasmids** | **Characteristics** | **Source** |
| pBBR1-Rha-redγβα-kan | pBBR1 replicon, kmR, redγβα under the control of Rha promoter | Lab stock |
| p15A-cm-tetR-tetO-hyg-ccdB | p15A replicon, c*mR* | Lab stock |
| pMSP3535 | pBR322 replicon, ermR, repE, nisR, nisK, under the control of T7 promoter | Lab stock |
| RK2-pBAD-Cre-Dre-sacB | pBAD replicon, apraR, kmR | Lab stock |
| pNBU2-erm-genta-cspRecT | pNBU2 replicon, gentaR | Lab stock |
| pBBR1-Rha-redγβα-Kan-erm | pBBR1 replicon, kmR, redγβα under the control of Rha promoter | Lab stock |
| p15A-cm-Pgenta | p15A replicon, cmR, iunH under the control of Pgenta promoter | This study |
| p15A-cm-iunH | p15A replicon, cmR, iunH under the control of Pgenta promoter | This study |
| p15A-cm-HA-erm-scaB-iunH | p15A replicon, cmR, scaB under the control of erm promoter | This study |
| **Mutants** | **Characteristics** | **Source** |
| LP∆iunH | The deletion of 957 bp (2381344-2382300) region on L. plantarum chromosome was replaced by a linearized fragment of a plasmid of p15A-cm-HA-erm-scaB-iunH | This study |
| **Primers** | **Sequence** | **Application** |
| p15A-5 | AAACTACCGCATTAAAGCTT | For amplification of p15A-cm supporter |
| p15A-3 | CTGAACCGACGACCGGGTCG |
| p15A-Pgenta-5 | CAGAAATTCGAAAGCAAATTCGACCCGGTCGTCGGTTCAGGAAGGCACGAACCCAGTTG | For amplification of Pgenta promotor |
| genta-60kDa-3 | CGTTGCTGCTCCATAACAT |
| Pgenta-iunH-5 | TACGCCGTGGGTCGATGTTTGATGTTATGGAGCAGCAACGGAGGATGTTTTACATGGCA | For amplification of iunH gene |
| iunH-3 | TTTGACAGCTTATCATCGATAAGCTTTAATGCGGTAGTTTCTAATGGGCTTTAAATAAT |
| erm-5 | GTTCTATGCTTTCTTTTTGTAGCCGGCTAAACGGATAGTCCCCCAAAATCATCTTGCCTTTGATATTGAGGTATCATTT | For amplification of erm resistance gen |
| erm-3 | CCTTTTTAATCACAATTCAGAAAATATCATAATATCTCATTTCACTAAATAATAGTGAACTTAGCCGTTAAATATTTTA |
| sacB-5 | GTTCACTATTATTTAGTGAA | For amplification of sacB gene |
| sacB-3 | AGTGTGACTCTAGTAGAGAGCGTTCACCGACAAACAACAGTTTGTTAACTGTTAATTGT |
| Pi-HAR-2 | GACATTCCCGGCAATCGGAC | For amplification ofp15A-cm-HA-erm-scaB-iunH plasmids |
| Pi-HAR-1 | AAGGCAAGATGATTTTGGGG |
| Pi-HAL-2 | TTTGAACACTCATGTTTAAC |
| Pi-HAL-1 | GATGGATGTTCAACTAATTTGTCCGATTGCCGGGAATGTCGCTGATTGATCTGAAAGGA |
| P15A-PiHAR-2 | TGTTAGTCATTTTCTTTCTCAACCTCGTCATTGGCACCAAGTTAAACATGAGTGTTCAAAGACGTCGATATCTGGCGAA |
| check-HA-PiunH-1 | TTCGCTTGAGGTACAGCGAA | For the first step of single-exchange recombinant colony PCR detection |
| check-HA-PiunH-2 | GCTGTTAATGGCAGAGGTAG |
| **Antibiotic** | **Source** | **Identifier** |
| GLUT9 (1:1000) | Proteintech | 26486-1-AP |
| ABCG2 (1:5000) | Abcam | ab108312 |
| PRRS (1:1000) | Bioss | bs-4504R |
| XO (1:5000) | Abcam | ab109235 |
| β-actin (1:5000) | Proteintech | 60009-1-Ig |

**Table S1. Strains, plasmids, mutants, primers, and antibiotics used in this study.**

The description and source for strains, plasmids, mutants, primers, and antibiotics used in this study.